THE IRON AGE

THURSDAY, JANUARY 3, 1889.

The Standard Rocking Grate Bar.

The Standard Rocking Grate Bar which we illustrate on this page, and which is put on the market by the National Iron Works, of New Brunswick, N. J., possesses several features of excellence.

One of the principal improvements embodied in the new bar is the use of separate leaves or fingers, which are cast independently of the main bearing bar, as shown in the small cut. These leaves are so constructed that when in position they cover the upper edge and sides of the bearing bar, and protect the latter from the direct action of the fire, thus preventing warping. The fuel lies on the upper edge of the leaves, and, consequently, there is a current of air passing between them and over that part which covers the upper edge of the bearing bar, and this further tends to keep the bar from becoming overheated. While the leaves when placed on the bar and fastened by the key-leaf are firmly held in their places, they can be readily removed when desired and new ones put in their places without taking the bars out of the frames. The wear, it is claimed, has been reduced to a minimum, as it all comes on the removable leaves, which cost but a small amount in comparison with the repairs necessary where the entire bar must be replaced. By casting the leaves separately the air space can be made of any desired width and much smaller than would be practicable where the fingers are cast on the bar. The coal being supplied to the upper surface of the bed of fuel, the ashes and clinkers find their way to the bottom and come in contact with the leaves of the bars. By the peculiar shape of the leaves the clinkers are crushed between them when the bars are rocked. The fuel is agitated just enough to cause the ashes and crushed clinkers to drop into the ash-pit. This method of handling the fire renders it unnecessary to use the slice bar, as with the ordinary grate.

There are two movements to the shaking apparatus. One is a moderate movement for the purpose of cleaning the fire; the second is adjusted so that the entire bed of fuel can be dumped into the ash-pit while the fire and ash-pit doors remain closed, thus confining all dust inside of the furnace. The framing on which the bars are placed is made with four standards, or legs, which rest upon the bottom of the ash-pit, and do not depend upon any part of the walls for support. No alteration is therefore necessary in the walls of any furnace in order to use these bars. The

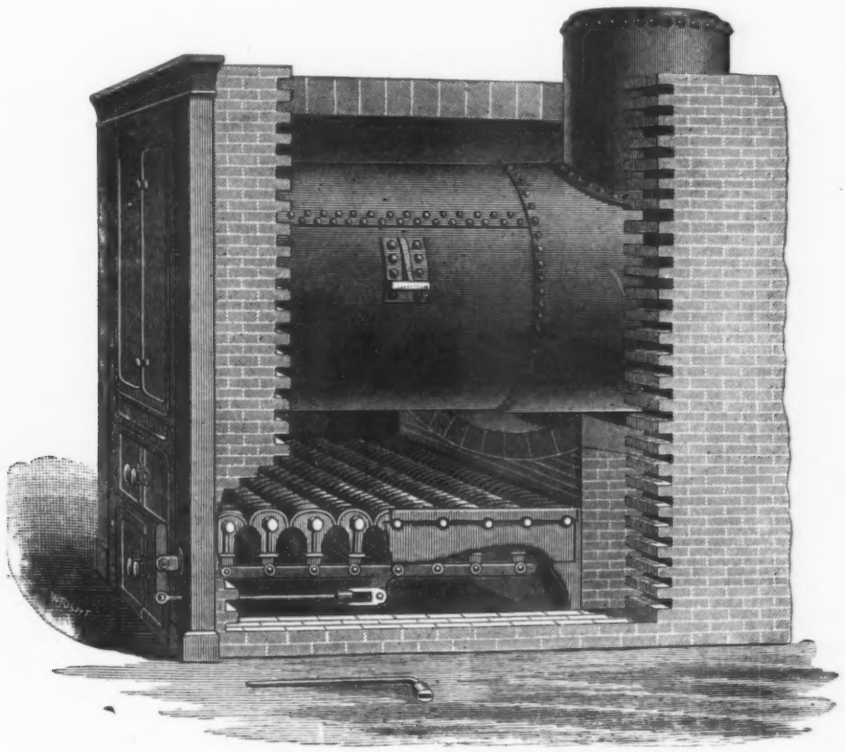


Fig. 1.—General View.

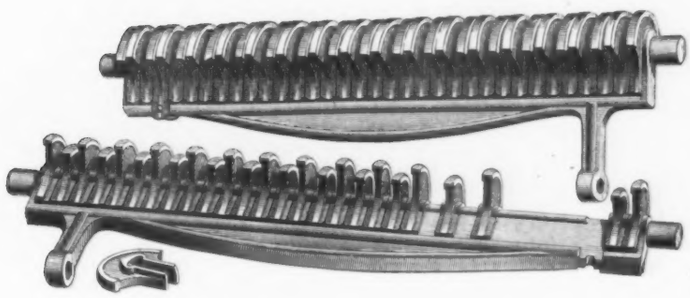


Fig. 2.—View of Single Bars, Showing Adjustment of Movable Leaves.

THE STANDARD ROCKING GRATE BAR, MADE BY THE NATIONAL IRON WORKS, NEW BRUNSWICK, N. J.

frames are made in sections, which can be passed through the fire or ash-pit doors and be put together inside the furnace space. All that is required is a clear space inside the furnace walls.

The leaves of the Standard bar are so constructed that during the entire shaking motion the space remains the same. As a consequence no coal is wasted by dropping through the bars into the ash-pit. The bars are adapted to all kinds of fuel and will, it is claimed, work equally well on fine or large size coal, and either anthracite or bituminous.

LEGALIZING RAILWAY POOLS.

Argument by a Barb-Wire Manufacturer.

The people of Iowa have made greater efforts than the citizens of almost any other State to solve the problem of equalizing railway rates. The State is peculiarly situated, being traversed by great east and west through lines of transportation, competing for traffic at heavy business centers outside of the State, and endeavoring to make local business in the State as profitable as possible to cover losses on through business. The result of this peculiar policy has been so detrimental to Iowa manufacturers and jobbers that they naturally regard it as a discrimination against them and in favor of outside interests. The Iowa Steel Barb Wire Company, of Marshalltown, have suffered seriously from this cause, and R. E. Sears, President of the Company, is deeply interested in the attempts now being made to secure a remedy through corrective legislation. The following article from his pen, published in the *Times-Republican* of Marshalltown, is a timely contribution to the discussion of the subject, which he treats in the utmost good temper, and with a desire to see entire fairness done to all interests.

It is an accepted fact that railway legislation has come to stay, and that hereafter railway managers must recognize a higher power than their own caprice and cupidity. Discrimination as between individuals of the same locality has ceased, or at least we no longer hear complaints of it. Discrimination as to localities and States still exists and is the subject of most serious consideration. The legislation in Iowa has been the result of an overwhelming demand on the part of its people that the discriminations of the railroads against them should cease. It is a fight for self-preservation, and to any one who has studied the history of the movement and the causes leading up to it, it is manifestly unjust to charge the people of Iowa with a spirit of hostility to railroads or corporations or capital. Nowhere in our broad land are the people more conservative or more sensitive to the rights of others than are the people of Iowa. Conscientious, patient, they wish to confiscate or unjustly depreciate no one's property, nor do they intend to have their own confiscated if there is any legal relief.

Railroads, unrestrained, can make and unmake not only individuals but localities and States. Their power, unchecked, is more potent than that of the officers and legislative bodies of this country in increasing or decreasing the values of property. The very extent of the power suggests the necessity of its restriction to such limits as shall be just to all. The highest tribunal has so adjudged. The decision in the granger cases is now the law of the land and its correctness is unquestioned. The discriminations causing dissatisfaction in Iowa were in part from a desire of railway managers to have large earnings and consequently larger dividends, and perhaps, in greater part from a relentless competition at competitive points. One result of these rate wars was that frequently the railways would haul freight a certain distance for half or less of the rate they would haul the same freight half the distance. To illustrate: They would haul a car of cattle from Council Bluffs to Chicago—500 miles—for $25, while from Marshalltown to Chicago—300 miles—over the same line and in the same direction for the same service they would charge $50. I merely give approximate figures.

This manifest injustice, becoming general, was the cause of that clause of the Interstate law forbidding railways to charge more for a short than for a long haul over the same line and in the same direction. The effect of that clause has been not to stop rate wars (as was anticipated) but to reduce the earnings of the roads to such an extent that many of them are on the verge of bankruptcy, and if the wars are to continue, the country is threatened in consequence with a financial panic, disastrous alike to the owners of the roads and to the public generally. The roads are the authors of their own ruin and not Iowa legislators. It is certainly not the latter, for railway managers do not pretend to have complied for a single day with the rate requirements of the law. Actuated by a reckless desire to secure business and to cripple rivals, they have engaged in a species of hari-kari, alike deadly to themselves and to their patrons.

Rate wars, as a rule, are an injury to both the roads and the public. They are an injury to the roads because they not only give the service for less than the cost, including fixed charges, but the low rates stimulate large shipments that ordinarily would not go forward for months in the future, thus reducing the business that would otherwise have been hauled at a profit to the roads, burning the candle at both ends so to speak. It is an injury to the people because it induces them (particularly the merchants and manufacturers) to over-purchase for the sake of the low rates and to suffer the financial embarassements consequent thereto; and, with the exception of a few articles like coal and lumber, the freight is so small an item of cost that the consumer receives no appreciable benefit. For instance, how much more sugar or coffee or tea or calico does a consumer receive for a dollar when the freight is $25 per car from Chicago to Council Bluffs in place of $50? Rate wars are a particular injury to the farmer in the shipment of his products to market, as the low rates stimulate heavy shipments and the markets are glutted and the prices thereby seriously depressed. How often is a $10 per car reduction in freight followed by a ¼ to a ½ cent per pound reduction in the market price of cattle and hogs, and a proportionate reduction in cereals?

The people of Iowa demand not a ruinously low rate, followed by an exorbitantly high rate, but a reasonable, relative and uniform rate—one that will give the railways fair compensation for the service rendered and at the same time will be fair to each section of the country. The rate must be relative—that is, must be in just proportion to the services rendered and the cost of service. It is clearly unjust to charge as much for a car of freight over the same line and in the same direction for 300 miles as for 500 miles, or for 100 miles as for 300 miles. What the proportionate charge shall be can be determined largely by the relative cost of service.

How to secure such reasonable, relative and uniform rates is the problem. If rate wars from terminal or competitive points below cost continue, we certainly cannot secure relative rates. Iowa's Governor, legislators and railway commissioners, however earnest their efforts and pure their motives, cannot give us the desired relief, because at least 80 per cent. of our freight is Interstate—that is, comes from other States into Iowa, or goes from Iowa into other States, and congress alone has authority to act in such cases. To secure relative rates we must first see that reasonable and uniform rates are charged at competitive points. By uniform rates I do not mean the same rate for all classes of freight, but a permanent or stable rate, one that is not constantly fluctuating. Then it will be possible for relative rates to follow. Without the first we can never have the second. Stability in rates is of the utmost importance in business; fluctuating rates create demoralization and anarchy.

He who points out the way whereby reasonable rates shall be received by the railways at competitive points and be maintained has done much toward solving the problem and reconciling the interests of the people and the railways, and securing harmonious action between them. Harmony on a just basis is better for both than strife. The industries of Iowa, farming, manufacturing and jobbing, were never so prosperous as when there was a strict and strong pool at the competitive points. These relative rates were possible and equalized rates—that is, the two local rates equaling the through rate, were given. There was then a stability to rates and consequently a stability to business. If the pool was strictly adhered to, the greater the stability; if violated, the greater demoralization to business. As pooling agreements were not enforceable at law, dishonest members often violated them and thereby brought on rate wars. I know how unpopular railway pools are in the public mind and how they are prohibited by the Interstate law. They were often unfair and unreasonable in their rates. The writer does not seek to vindicate them or to apologize for their defects. He is seeking a way, if possible, out from the present discriminations from which Iowa is suffering. If our remedy is through a pool, he would not throw away the remedy merely because he did not like the name. The rose would not lose its perfume from being called by another name. The remedy would not be more efficacious if it had a more popular name. It is not the name, but the substance that we want.

Suppose that part of the Interstate law prohibiting pools was repealed and a new clause substituted legalizing railway pools and the agreements between the roads constituting the same, that the long and short haul clauses be retained with its present provisions, that equalized rates be permitted, that the reasonable rates to such competitive points shall be fixed or at least approved by the Interstate commissioners, would not such an arrangement enable us to secure reasonable and stable rates at the terminal or competitive points and relative rates at the intermediate points? And when these were secured, would there not be an end to the discriminations under which our Iowa industries have languished and in some cases perished?

Legalizing railway pools is not new. A number of such pools in England have been legalized by acts of parliament. Railway pooling agreements received the sanction of the law in Germany and Belgium and the results have proven satisfactory. By making the rates subject to the approval of the Interstate commissioners, a check to extortionate rates is given. To insure a close feeling between the commissioners and people, it might in time be considered wise to have one or more national commissioners elected from each State, the number in each State depending upon the mileage in each State, who should be elected by the people the same as members of Congress are elected.

Fowler & Sons, of Buffalo, N. Y., request us to state that they are the sole proprietors of Anderson Bolt Works, of Anderson, Md., to which we referred in our report on the Indiana Natural Gas District. They add that they make Buffalo an Eastern distributing point for the product of their works, carrying there a large stock which enables them to fill orders quickly.

A large number of the younger members of the metal trade have passed, lately, memorial resolutions of regret and appreciation relating to Arthur L. Cort, whose sudden death in San Francisco was announced recently.

Screw Making by the Cold-Rolling Process.

About a year ago we briefly described and illustrated a new wood screw which the American Screw Company, of Providence, R. I., were preparing to put on the market. The screw, as we explained at the time, was in a measure based upon the patents of Mr. H. A. Harvey, which covered the formation of screw threads by a rolling or swaging process, but which have been supplemented since their purchase by the American Screw Company by the inventions of Mr. Charles D. Rogers. The process, as finally developed and now applied, differs radically from every other screw rolling process, not excepting Harvey's, and the product represents in every respect one of the most interesting and important achievements among the many in the manufacture of wood screws. Mr. Harvey, in rolling a thread on a screw blank carried the operation through three successive stages of rolling, deepening the thread slightly in each of the three rolls, and finally devised a rolling die in which the three originally separate dies were combined, and the deepening of the threads was accomplished gradually in one machine and in practically one operation. In this way he simplified his process considerably as compared with his earlier methods, but the screws which he turned out were in no way superior to those of ordinary make, and presented no difference except possibly in point of cost. In order, however, to obtain a clear field the American Screw Company secured control of the patents, and then, through Mr. Rogers, developed a new system, retaining the fundamental idea of producing a thread by rolling, but attaining the end in an entirely new way, and turning out a screw which appears to be superior in several respects to the well-known wood screw now on the market.

Through the courtesy of the company we are enabled to present in this issue engravings of the rolling machine which they use, and of which the manner of working will be understood with little difficulty. Before entering upon a description of the machine and process, however, it may be interesting to briefly review the ordinary processes of screw making as now practiced. To these we referred in a recent issue, but will repeat here that the wire rods which are used, and which are to a great extent imported, are first cleaned and drawn into wire of desired gauge for the different sizes, or rather diameters, of screws to be turned out. This wire on reels is next fed into what are known as heading machines, in which the screw blanks are partially formed, a proper length of wire for a screw being cut off and a head being formed by one or more blows from a heading hammer. The partially finished blanks having been rattled in sawdust, to remove the oil used in the heading operation, are then taken to the shaving and slotting machine. The process to which they are subjected there consists in shaving the head of the rough blank on top and around the countersink —that is, the side of the head; then the slot is cut by means of a saw. This makes re-shaving of the head necessary, as small burrs would otherwise be left on each side of the slot. The operation is entirely automatic, the blanks being fed along a slide, gripped, presented to the shaving and slotting tools and released one after another. The finished blanks are now taken to the threading machine. In this also the entire operation is automatic. The blanks pass along a slide, one by one, in the same way, are properly gripped and presented horizontally to a cutting tool secured in a movable tool block. This has the necessary amount of longitudinal feed to give the desired pitch to the thread, and has a quick return motion, several cuts being taken before a finished thread is secured. Soda-water is used as a lubricant. The finished screws are here also dropped into a receptacle underneath the machine, and are then ready for cleaning, packing and shipment.

In the new process of manufacture the work of preparing the blanks before threading has been greatly simplified, all the operations being performed in the heading machine and no trimming or shaving of the heads being necessary. Aside from this the object to be attained in the heading machine is the production of finished heads of a larger size relatively to the wire from which the screw is formed than has been common heretofore. These several objects involve the use of solid dies which present no seams on the surfaces on which the screw heads are to be formed, since the marks of such seams would show on the surfaces of the heads. The use of three hammers also is made necessary, since the desired large head can be obtained only from an increased amount of metal. This means an increase in the length of wire to be upset, and such an increased length renders the wire more liable to "cripple," or bend under the action of a single hammer blow, or even of two, in such a manner as to make it impossible to produce either the symmetrical form required or a sound and strong head. The exact way in which the blanks, and more particularly the heads, are formed will become clear from the three small engravings shown in Fig. 19. The partially formed blanks are there arranged in the order in which they are turned out. We will suppose a reel of wire being fed into the heading machine. The proper length for a screw-blank being gripped in the dies, the first hammer blow partially upsets the projecting end, as in *a*. The collar thus formed more readily induces the flow of metal in the desired direction, and the second blow produces the shape *b*; the third completes the head and forms also the slot for the screw-driver. The fourth operation, finally, consists in cutting off the blank from the wire coil, and this corresponds practically with swaging the points. We have not shown the complete finished blank, as its appearance can readily be imagined. The slot in the head, we should here explain, is formed by a tongue extending from the face of the hammer, which finishes the head. This tongue is forced into the metal in advance of the action of the flat surface of the hammer upon the metal, and forms an obstacle to the flow of the metal from one side of the die to the other. It is important, therefore, that the metal, before this hammer acts upon it, shall be distributed symmetrically with reference to the slot upon the two sides of the die. Again, it is obvious that the tongue, as it is forced into the metal, must spread the metal laterally; but at the ends of the tongue it does not force the metal freely toward the surface of the die, but has a tendency to carry it downward, so as to produce an imperfect face at the ends of the slot. This tendency shows itself most decidedly in making the heads, as in this case, of a larger diameter across the face than has been commonly practiced heretofore, and explains why the blank after the second blow has a head formed as in *b*. It will be noticed there that the upper surface of the partially formed head is convex along one diameter, and it is in the line of this diameter that the slot is formed. There is, accordingly, ample metal at the parts adjoining the ends of the slot to admit of a good deal of stretching without tearing. The hight and width of the convex portion will vary with the size of the screw-heads and the depth and width of the slot, and also with the character of the metal. The simplicity and directness of the whole operation, which is carried out in one machine, as compared with the repeated handling of the incomplete blanks in the old method of shaving, trimming and nicking the heads is striking. It is noteworthy also that the metal is worked cold. The blanks, as they drop from the dies in the heading machine are complete in every way, though before being threaded they undergo rattling. The rattlers, as no doubt most of our readers know, are revolving boxes, and ordinarily are used for giving articles put in them a rough finish. In this case, however, they contain sawdust, which to some extent absorbs the oil with which the blanks are covered.

Of the machine which is employed for rolling the threads on the blanks, we give a large number of details besides the two general views on the plate. The operation, however, is, in the main, simple and can be followed with little difficulty. Taken altogether the machine offers an interesting illustration of what can be done by automatic mechanism. All that the attendant has to do, one being sufficient for several machines, is to dump the screw blanks into the receptacle at the top, marked H, in Fig. 2; the finished screws drop out underneath into the box shown in the side elevation. Those of our readers who remember the engravings which we published a year ago of the Simonds metal rolling machine, in which screws also could be turned out, will find in the present apparatus an apparent similarity, owing to the fact that reciprocating dies also are employed. It should be noted, however, that in this machine all the work is performed on cold, not hot, metal and the principle of forming the screw threads, moreover, is entirely different. That this is so will presently be seen. Perhaps the best idea of the construction and function of the machine can be gained by following a screw blank from the hopper through the different operations until it emerges as a finished screw. The blanks then are, as we have already said, dumped into this hopper (H in Fig. 2) as they come from the rattlers. Within the hopper is fitted a narrow double blade, *m*, Fig. 1, which moves up and down through the mass of blanks. Its upper edge is formed at an angle, so that as the blade arrives at the end of its upward movement any blanks it may have picked up will readily slide from it on to the track T, through an opening formed in the hopper and coinciding with the track. Motion is imparted to the blade or "pick-up" through the medium of a vertically guided rack, m^3, Fig. 2, which meshes into a small gear-wheel, m^2, loosely mounted on a horizontal shaft, *s*. This shaft has a gear-wheel, m^1, secured to its inner end, which gears with rack-teeth, *m*, Figs. 2 and 3, formed on the upper face of the rack-connection, d^2. Practically it is found desirable to be able at times to prevent the "pick-up" from delivering the blanks. Therefore, the gear m^3 is loosely mounted, and is provided with lugs arranged to interlock with the clutch and nut, *n*. The clutch is splined to the shaft, and is adapted to slide endwise, as common to locking devices of this character. The way in which the rack connection, as we have termed the part d^2, is driven, will be understood from Figs. 1 and 2. Power, it will be noted, is transmitted to the machine through a belt and the pulley shown in the plan. Mounted on the other end of the pulley shaft is a pinion gearing into a larger spur-wheel which, as Fig. 1 shows, drives a cross-head, B, through a connecting rod, *c*. To this cross-head, near its lower side, is secured a strong, guided connection, c^2, having rack teeth formed in its inner vertical face. This connection is well supported and guided at its forward end by the extension *g*, formed in

the frame. The similar toothed connection, d^3, is secured to an opposite cross-head and mounted in the same horizontal plane as the connection c^2. Intermediate of these racks c^2 d^3 is mounted a vertical shaft, d, having secured at its upper end a strong gear-wheel, arranged to gear with both racks, as clearly shown in Figs. 1 and 2. By means of this device it is obvious that the two cross-heads will be reciprocated in opposite directions and at exactly the same relative speed, so that both are always traveling and acting in complete unison. Both cross-heads reciprocate in ways formed in the main frame, their length being somewhat greater than twice the length of each cross-head. In Fig. 1 the cross-heads are represented as being at the extreme of travel, and preparatory to engaging a screw blank, which is held vertically while being acted upon. The upper parts of the ways are formed by gib-plates secured to the bed. By this arrangement the cross-heads are forced to travel in a true plane, the broad base and sides insuring great stiffness in action. Each of the thread-forming dies, to which we shall have occasion to refer later, is marked D, in Fig. 3, and is mounted in an L-shaped seat, h, which, in turn is adjustably secured to the cross-head by bolts, a^3 (Fig. 4), a clamping plate, a^2, resting upon the die and cross-head as shown in Fig. 8, being interposed. In order to attain a nice adjustment of the dies in a lateral or transverse direction, a wedge-

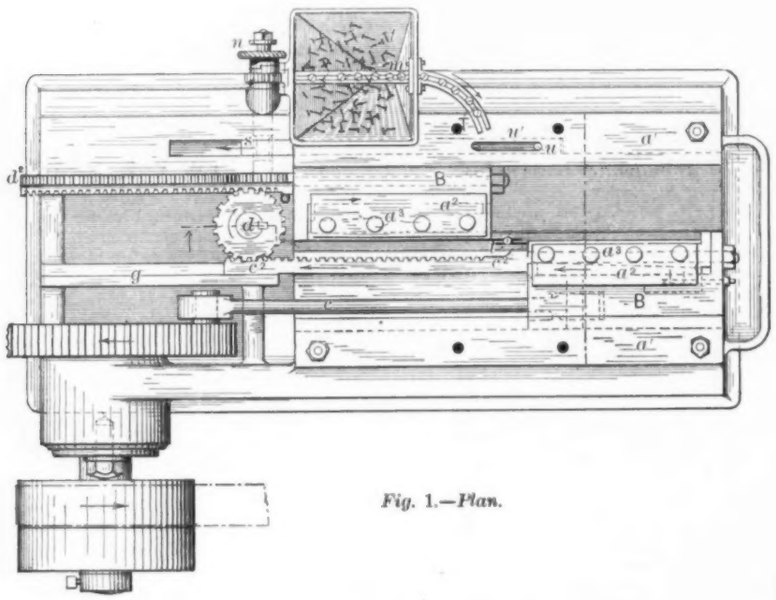


Fig. 1.—Plan.

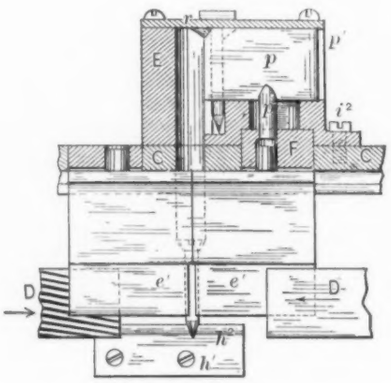


Fig. 7.—Section Showing Action of Blank-Holding Jaws.

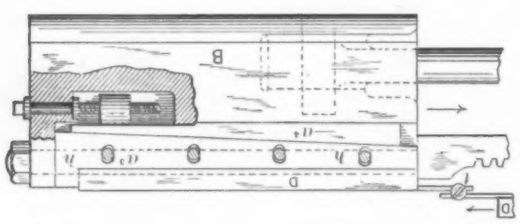


Fig. 4.—Plan and Section Showing Mounting of Cross-Head.

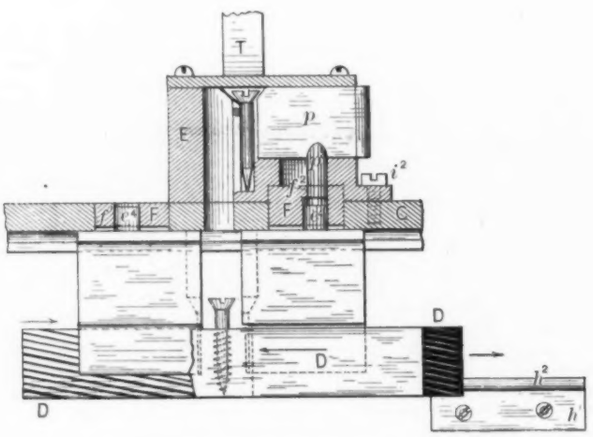


Fig. 5.—Section through Center of Screw Blank Receiver.

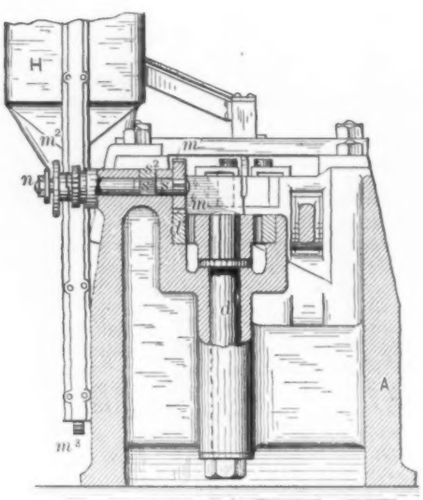


Fig. 2.—Vertical Cross Section.

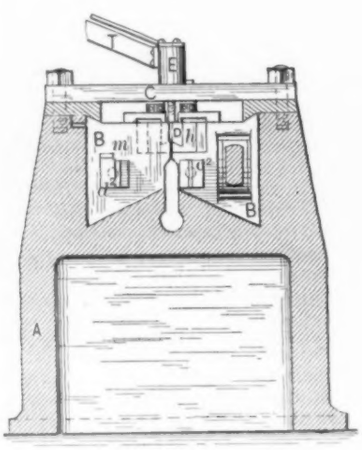


Fig. 3.—Vertical Section Forward of Hopper.

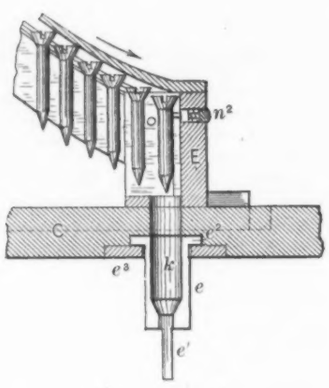


Fig. 6.—Section Showing Blanks in Runway.

MACHINE FOR COLD-ROLLING OF SCREWS, AT WORKS OF THE AMERICAN SCREW CO., PROVIDENCE, R. I.

shaped piece, a^4 (Fig. 4), is placed at, and forms a backing to, the seat h. It is worked by a nut and screw on the end as shown.

Referring to Figs. 1, 2 and 3, it will be noticed that a rack-rod, s^2, is fitted into the upper part of the frame at the rear side. The front portion of this rod is provided with gear-teeth on its under side, which engage teeth s^1 cut into the shaft s (see Fig. 2). By this arrangement it is evident that a reduced reciprocating movement is imparted to the rod s^2 in unison with the cross-head. An elongated opening, u^1 (Fig. 1), is formed in the center portion of the rear gib-plate, a^1, through which a pin, u, secured to the rear end of the rod s^2, projects. The object of this rod and attachments is to actuate the blank-checking and holding devices which we shall presently describe. A plate, C (Fig. 3), firmly unites the two sides of the frame, being bolted to them. Its center is directly over the center of the space formed by the separation of the dies when in their extreme position. Its upper surface is recessed as shown in Fig. 9 to receive the cam plates F (Fig. 11). A slot, f^3, is cut through to receive the previously mentioned pin u. Two slots, f^4, are formed transversely in the plate C and communicate with a T-shaped groove seen in the section at the right in Fig. 9. This groove is formed in the under side of the plate and serves the purpose of retaining the blank-holding jaws shown in Figs. 5 and 6, marked e, in the latter figure. Gibs e^3 secured to the plate, prevent the jaws from dropping out, although permitting them to travel back and forth, as in opening and closing when combined with the cam-plate F. The jaws are each provided with a short pin, e^4 (Fig. 5), which passes through the openings, f^4. The adjacent vertical faces of the jaws are cut out in a semi-circular form, k (Fig. 6), and are countersunk at the bottom, so as to freely receive the headed blanks. The jaws are reduced in thickness at the lower portion, as at e^1, so that they may easily enter the space formed by the lateral separation of the dies, the edges being concave to more readily retain the blanks in position.

The plate F is provided with three cam-shaped slots, f, f', f'' (Fig. 11), cut through it, the first named slot being adapted to receive the pin u of the rack-rod s^2. The other two, which are shorter and are arranged right and left, are adapted to receive the pins e^4 of the jaws e. It is obvious now that by placing the plate F in the planed-out portion of the cap-plate C, and also mounting the jaws in position beneath the latter plate, a longitudinal movement of the pin u, extending through the straight slots u^1 f^3 and into the cam-slot f (see Fig. 10), will cause the plate F to move back and forth across the machine a distance corresponding to the throw of the cam. At the same time, by reason of the engagement of the pins e^4 with the cam-slots f^1, the jaws will be made to open and close, the distance traveled being governed, of course, by the offset of the cam. A portion of one of the arms of the cam-plate F extends above the general surface of the plate, and is provided with an additional cam-slot, f^2 (Fig. 12). This cam-slot is substantially of the same length

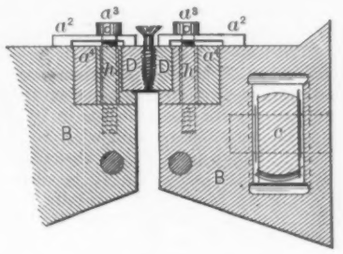


Fig. 8.—Section of Dies and Holders.

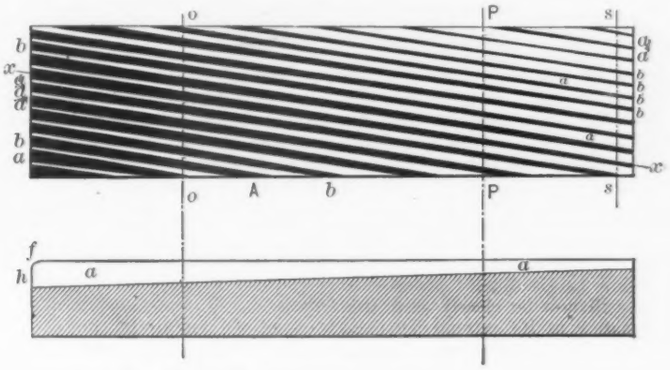


Fig. 14.—Plan and Section of One Die for Rolling Threads.

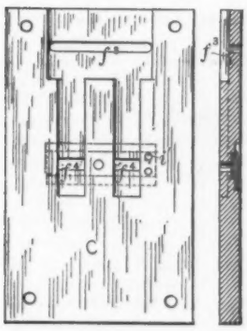


Fig 9.—Details of Cross Plate C.

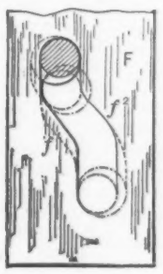


Fig. 12.—Enlarged View of Part of Cam Plate.

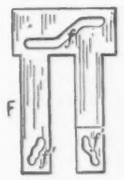


Fig. 11.—Plan of Cam Plates.

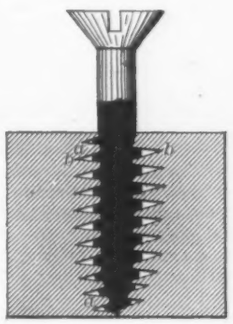


Fig. 15.—Cross Section of Dies and Screws at o o, Fig. 14.

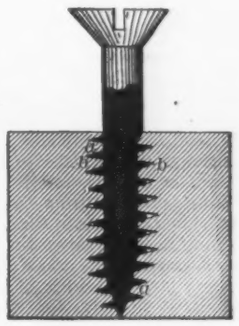


Fig. 16.—Section Along p p, Fig. 14.

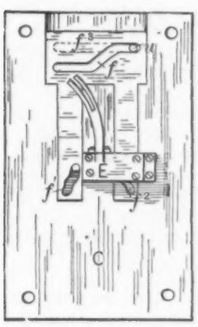


Fig. 10. — Plan of Checking Device for Blanks.

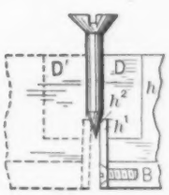


Fig. 13. — Manner of Supporting Blanks Between the Dies.

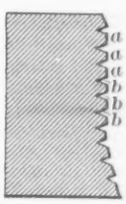


Fig. 17.—Section Along s s, Fig. 14.

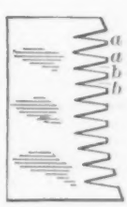


Fig. 18.—End of Die where Rolling Begins.

a *b* *c*

Fig. 19.—Upper Ends of Screw Blanks in Different Stages of Heading.

MACHINE FOR COLD-ROLLING OF SCREWS, AT WORKS OF THE AMERICAN SCREW CO., PROVIDENCE, R. I.

as the lower slot f^1, as clearly shown by the full lines.

The checking device for the screw-blanks is arranged in a box, E, Figs. 5, 6 and 7, secured to the center of the cap-plate and clearly seen also in both perspective views. A vertical opening is formed in the rear wall of the box and coinciding with the mouth of the track T, the width of the opening being slightly in excess of the size of the shank of the screw-blank. The upper portion of the opening is made flaring, as at r, Fig. 7, to freely receive the heads of the blanks. A vertical slot is formed longitudinally of the checking box, intersecting the opening just described as coinciding with the mouth of the track T. A plate, p, is fitted to move back and forth in this slot, and has on its lower side a pin, p^3, which engages the slot f^2 in the cam-plate F, the latter, in part, fitting into the base of the checking box. By means of this construction it will be seen that by moving the cam-plate back and forth across the machine the slot f^2 will cause the plate p to reciprocate longitudinally on the machine. It will now be clearly seen that when the plate is in its extreme left-hand position, as in Fig. 7, the column of blanks in the runway T is held in check, but by moving the plate in the opposite direction the opening in the check box opposite the track T will be uncovered, and the pressure of the column of blanks will force them ahead, one of them sliding into the path of the plate p; this will be more readily understood from Figs 5 and 6. The point of the blank rests upon and is supported by a ledge. A spring-pin, n^2, mounted on the box E just in advance of the blank, serves to maintain the latter in position until the plate p, upon its return stroke, engages it, and forces it past the yielding pin and from the support. The blank then drops into the vertical circular opening in front, down through a central hole formed in the plate C, and into the holding jaws e, which at the instant are separated slightly for the purpose. A cover is provided to close the top of the box E. This also serves to prevent the blanks from rising, an extension of it at the same time maintaining the blanks in position upon the runway T (see Fig. 6). A pin, mounted at the rear of the checking-plate, and shown in the end view on the first plate page, serves, when pushed forward, to temporarily keep the column of blanks from passing into the machine. It will be seen, referring to Figs. 4 and 5, that two thin strips, h^1, of metal, beveled at their upper edges, as at h^2, are arranged to receive the blank between them immediately upon its being forcibly ejected from the box E. These metallic strips are secured to the cross-heads, contiguous to the front ends of the threading dies, and serve to support the blank until the ribs of the dies have fairly commenced to act upon it. At the same time the blank is maintained in a vertical position by the jaws e which inclose it.

In following the threading process to which the blank is subjected we will assume the main gear in Fig. 1, operating the connecting-rod c to move in the direction of the arrow. The front cross-head B, with its die, will then move ahead, and through the side racks and the pinion on the shaft d will force the opposite cross-head to move in the reverse direction. The relation of the cap C and cam-plates to each other is as represented in Fig. 10. This movement of the cross-heads will cause the cam-plate F to slide backward through the medium of the rod s^2 and the pin u, which works in the cam-slot f, thereby, in conjunction with the two cam-slots f^1 and pins e^4, separating the jaws e. At the same time the cam f^3, acting upon the checking plate p will be forced back to uncover the opening in the check box E opposite the track T, the form and travel of the several cams being so arranged and timed that the holding-jaws begin to open immediately after the ribs of the thread-forming dies D have seized upon the blank. The continued travel of the dies impresses a screw-thread into the blank. As the dies pass each other at the extremes of their travel the threaded blanks will drop from them into a space beneath. Upon the return stroke, and immediately preceding its termination, the next blank to be acted upon will be forced past the check-pin n^2 into the jaws e by the action of the cam f^2 and the checking plate p. At the commencement of the next forward stroke the blank will be retained by the closed jaws, and also supported by the strip h^1, as clearly shown in Fig. 7. The dies now, in again traveling ahead, seize the new blank between them, and roll or impress a screw-thread upon it, as just described. It is, of course, understood that during the reciprocation of the cross-head the blanks are automatically fed from the hopper and along the track T to the checking device by the vertically traveling "pick-up" blade.

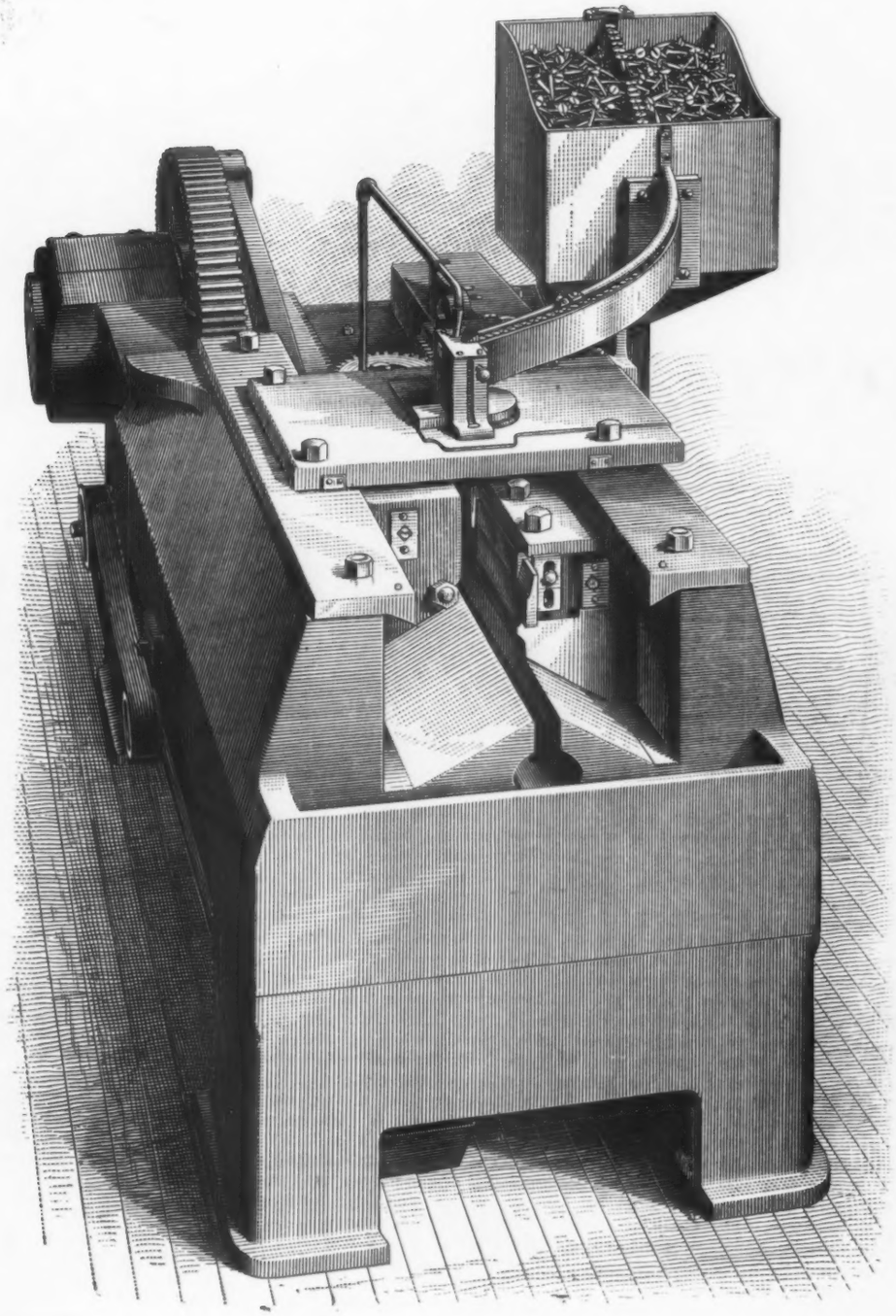
We come now to the threading dies and to the principle involved in forming the threads, which is both novel and ingenious. The upper part of Fig. 14 represents a plan of one die face, and the lower part a section along one of the grooves, as $x\ x$. We will explain here that the dark portions marked $b\ b$ represent grooves, and the parts $a\ a\ a$ indicate ribs. The dies, which are of hardened steel, are milled in special machines of ingenious design, which we cannot stop here to consider. The grooves are V-shaped, the sides having the same inclination to each other as the opposite sides of the screw thread to be produced. This inclination, we need perhaps scarcely add, is constant from one end of the die to the other, and the work of raising the thread is mainly performed by these sides. The hight of each rib and the width of its face or top, however, vary throughout the length of the die, and are determined at every point by the depth of the adjacent grooves. The face of each rib is substantially level, and has the form of a truncated wedge, very narrow at the end h, where the rolling commences, and much wider at the opposite end. The rib, in fact, is made as narrow at the entering end as is consistent with strength, in order that but little metal need be displaced when it enters the screw blank. To facilitate its entrance the top may be slightly chamfered, as at f. The action of the dies, always considering that there are two of them moving in opposite directions, will probably be readily understood when it is noted that at the beginning of the stroke the narrow ribs h are at once forced into the screw-blank to as great a depth as it is desired the ribs shall go at any time during the stroke. We may consider, then, that wide but comparatively thin strips of the metal of the blank are taken into the correspondingly wide grooves of the die at that end, and as the rolling progresses and the grooves in the die blocks become narrower the metal in them and between the ribs becomes more and more compressed, and gradually expands into the grooves of the dies, until at the end of the operation it fills them and the thread is completed. The blank is not stretched in the slightest, the length of the finished screw and of the blank before entering the dies being identical. This is due to the fact that there is no pressure on the body of the blank, radially, but all the work is expended on the metal between the ribs of the dies.

Perhaps more light will be thrown on the operation by an examination of Figs. 15, 16, 17 and 18. The text beneath these gives all the explanation required. The threads of the screws rolled in this way are very thin as compared with those of the ordinary cut wood screws. The advantage of this construction is that they enter the wood easily, and without displacing as much of it as does the cut thread, and with much less driving force. They have also long and tapering points, which at once commend themselves. The most important difference, however, in the new screw is the reduced diameter of the shank between the head and the commencement of the thread, doing away with the necessity of using two bits in hard wood to avoid splitting. The diameter of the shank of the screw is only slightly greater than the diameter of the core of the threaded portion, so that by using a single bit of the exact diameter of the unthreaded portion the body of the screw will exactly fill the hole made by the bit and the threaded portion will lie entirely in solid wood, into which the thread has entered, thus securing, it is claimed, a much firmer hold than is usually obtained, while the danger of splitting the wood is reduced to a minimum. To the more than ordinarily large heads of the screws for given sizes of wire we have already referred. Owing to the small shank for the size of screw produced, further, it is noteworthy that a No. 18 screw, for example, may be turned out from No. 12 stock, an advantage well worth considering. One other feature to be noted in the rolled screw is the very gradual reduction in the diameter of the body where the thread begins, and the breakages at this point noted in ordinary screws, due to the shoulders formed, are entirely avoided. The rolling process finally saves about 40 per cent. of waste metal which the operation of cutting screws entails. We understand that some of the screws have been put in the hands of large consumers who are competent judges, like the Brown & Sharpe Mfg. Company, Pullman's Palace Car Company, the C. B. & Q. Railroad shops, and many others, and, after careful tests, have been given very flattering testimonials. The American Screw Company inform us that they will probably exhibit some of their machines at Brussels. Companies may also be established in England and Germany.

We would add that the new processes involve such a complete revolution in screw manufacture, and the investigations are upon such entirely new ground, that the American Screw Company have found it desirable to secure home and foreign patents on the various mechanical devices, processes of manufacture and products exemplified. The company have experimented very carefully during the past few years and are now building machinery on a large scale as rapidly as possible for use in manufacturing.

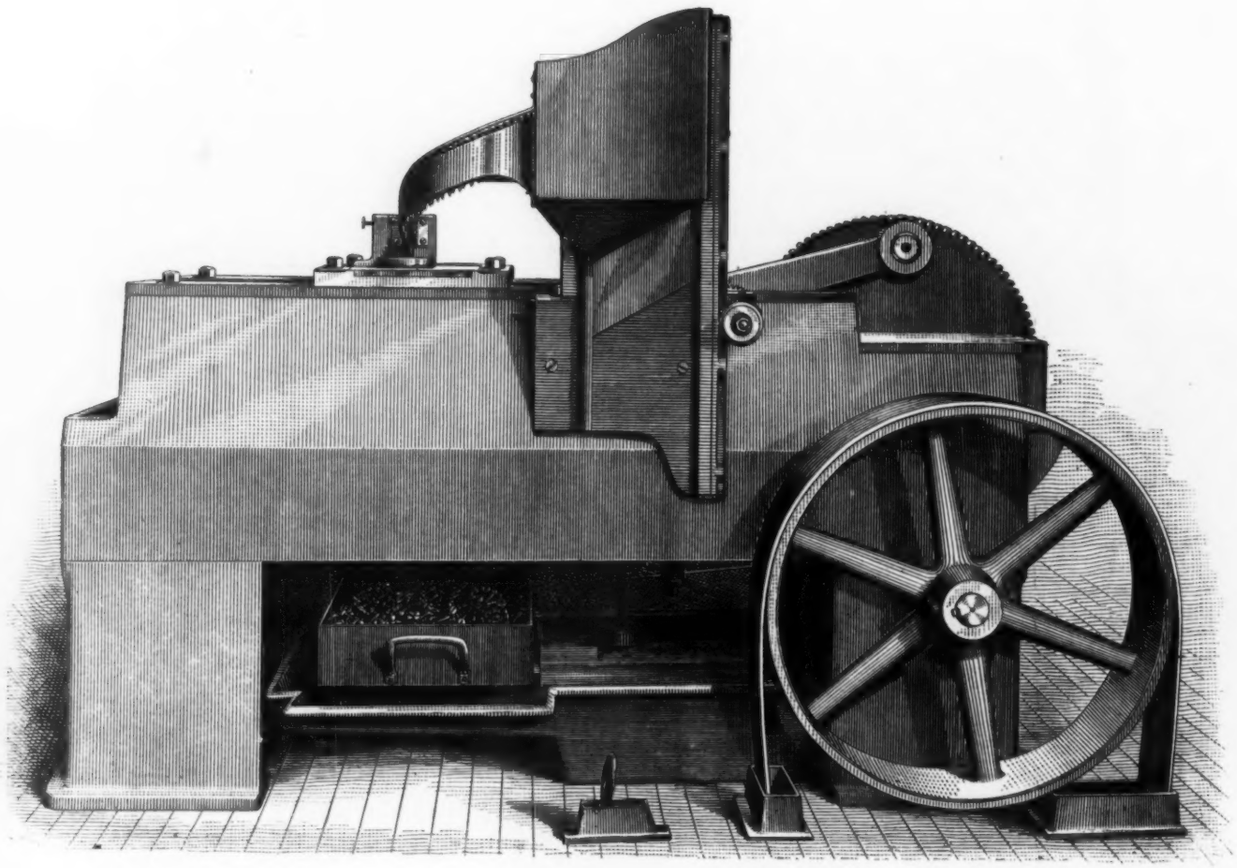
The New York City budget for 1889, as just made up by the Board of Estimate and Appropriations, looks well for the tax payers. As finally passed it footed up $37,637,069.91. Of this $4,602,760.74 will come out of the general fund, leaving $33,034,309.17 to be raised by general taxes. Comptroller Meyers stated that, while the budget is about $600,000 more than last year the tax levy will be about $800,000 less and the tax rate will probably be reduced from 2.22 to 2.16 or thereabouts. This reduction will be due partly to increased valuations, but more to the fact that large accounts which have been standing on the Comptroller's books for years have been turned into the general fund. The tax rate next year will be the lowest for many years. The city debt is now $132,457,395.46.

The Boston Steam Fitters' Association was organized last week, to promote the interests of their trade. The association resolved to attend a course of lectures on Steam engineering by Prof. Peabody.



End Elevation.

SCREW ROLLING MACHINE. AMERICAN SCREW COMPANY, PROVIDENCE, R. I.



Side Elevation.

SCREW ROLLING MACHINE. AMERICAN SCREW COMPANY, PROVIDENCE, R. I.

Coal and Iron Mines in the Tennessee Valley.

Allusion has been made in an article published in *The Iron Age* of December 13, page 890, to the large area of coal-bearing lands on the east of the line of the Cincinnati, New Orleans and Texas Pacific Railway. It is the great coal field of Tennessee, containing several mountains which rise over 3200 feet above sea level and many which are over 2500. These great hights take in a series of coal strata unknown to any area immediately on the line of railway. This great area, which has been denominated the "Upper Measure Coal Field of Tennessee," can be reached by branch roads up New River, up Black Wolf Creek, and by direct lines from Lansing or Oakdale. With the advantages of the road-bed of the Cincinnati Southern division for transporting freight at low rates, and the ease with which that area of coal can be reached, it should attract the attention of capitalists. A road with far better grades and curvature than that up the mountain at Tracy City can be built at comparatively low cost from Oakdale into the Crooked Fork coal field, where it would reach large area of coal, as well as a great amount of virgin timber. The road would have the great advantage of being all down grade with the loaded car. At Emory Gap, the Walden's Ridge Railroad forms a junction with the Cincinnati, New Orleans and Texas Pacific Railway. This road runs thence to Clinton on the Knoxville and Ohio Railroad, passing by the Poplar Creek Mines. These mines are 16 miles from the Cincinnati, New Orleans and Texas Pacific Railway, and a large part of their product should pass over it; and of such importance are they in the extent of the field and the superior character of the coal that they deserve notice, though they may not be considered as directly in the territory of the Cincinnati Southern. The larger part of the land in the Poplar Creek field is owned by the Coal Creek Mining and Mfg. Company, which company do not operate itself, but lease to others. A comparatively small area belongs to other parties. The locality has the capacity for being one of the important coal-producing areas in the South, there being so many points from which good entries can be made into the coal seams, as well as the number of easy outlets from the mountain. The companies now operating there are small, the complaint being most of transportation. From the Poplar Creek mines to the Cincinnati Southern is 18 miles, from that junction to Chattanooga is 79 miles, a total of 97 miles. But the coal does not travel that route now. It goes to Clinton, 16 miles, thence to Knoxville, 20 miles, thence to Chattanooga, 111 miles, total 146 miles. On the other hand, all coal from the Knoxville and Ohio Railroad for Kentucky points is brought to Clinton, thence over the Walden's Ridge Road to the junction at Emory Gap, and thence north by the Cincinnati, New Orleans and Texas Pacific.

The mining operations on Poplar Creek are as follows: Joe Richards & Sons, 60 hands, product about 150 tons per day. Winter's Gap Coal Company, 75 hands, product 125 tons per day. Eureka Coal Company, 33 hands, product 75 tons per day. Mitchell & Bro., 33 hands, product about 60 tons per day. Mt. Cartoon Coal Company (Wiley & Bro.), two openings, 39 hands, including those getting props and cross-ties, product 150 tons per day. The Cumberland Coal and Coke Company is a new one, which proposes large operations, but at present is only working in a small way, the number of hands being now 26, and the product 100 tons per day. The capital of this company is from Atlanta. The total present product is 660 tons, from an area which should ship at least 2500 tons of coal and coke per day. There is ample room for another railroad into this field.

The first mines on the line of railway after it reaches the Tennessee Valley are worked for iron ore of the red fossil variety. The foot of No. 1 mine is about 1 mile from the railroad station. It is operated by Col. Thos. Brown. The product averages 95 tons per day, and 35 miners and 8 outside men are worked. The distance to the railway is 610 yards, and loaded cars drop down by gravity. The mine is worked by a slope 400 feet long, the vertical hight being 235 feet. The vein ranges from 2½ to 5 feet in thickness, averaging above 4 feet. The ore at the depth of 235 feet below water level is found to be about as good as that near the surface.

No. 3 mine is 2 miles from the station, and is also operated by Col. Thomas Brown. There are 22 miners and seven outside men employed there, and the average product is 75 tons. The vein averages 3 feet 3 inches in thickness. It is 700 yards from the railway, and the cars drop down by gravity as at No. 1. Nearly all the ore from both these mines goes to the Dayton furnaces. Between Nos. 1 and 3 another mine is being opened by Brown & Tarwater. It connects to the main line by a wide-gauge track. At Rockwood Brown & Tarwater operate two mines, the product of which all goes to the Rockwood furnaces.

The Rockwood furnace was the pioneer in the manufacture of iron with coke in the South and the forerunner of the great industrial development now flourishing in the Southern States. The mines were opened and the first furnace erected in 1867 by Gen. J. T. Wilder and H. S. Chamberlan. The coal mined is entirely used in the two furnaces, at which and in the mines is worked a total of about 250 hands. The product amounts to about 60,000 tons per annum. This coal is in Walden's Ridge, an outer wall-like part of the Cumberland Mountain, where the coal and all other strata dip at an angle of about 45°. A part of the coal mined is made into coke, and some is used raw as in the furnace. Only one stack is now running, and the product is about 40 tons per day. The property belongs to the Roane Iron Company, Mr. M. Duncan being the superintendent. There is no doubt but that these furnaces have been the most regularly profitable of any in the Southern States.

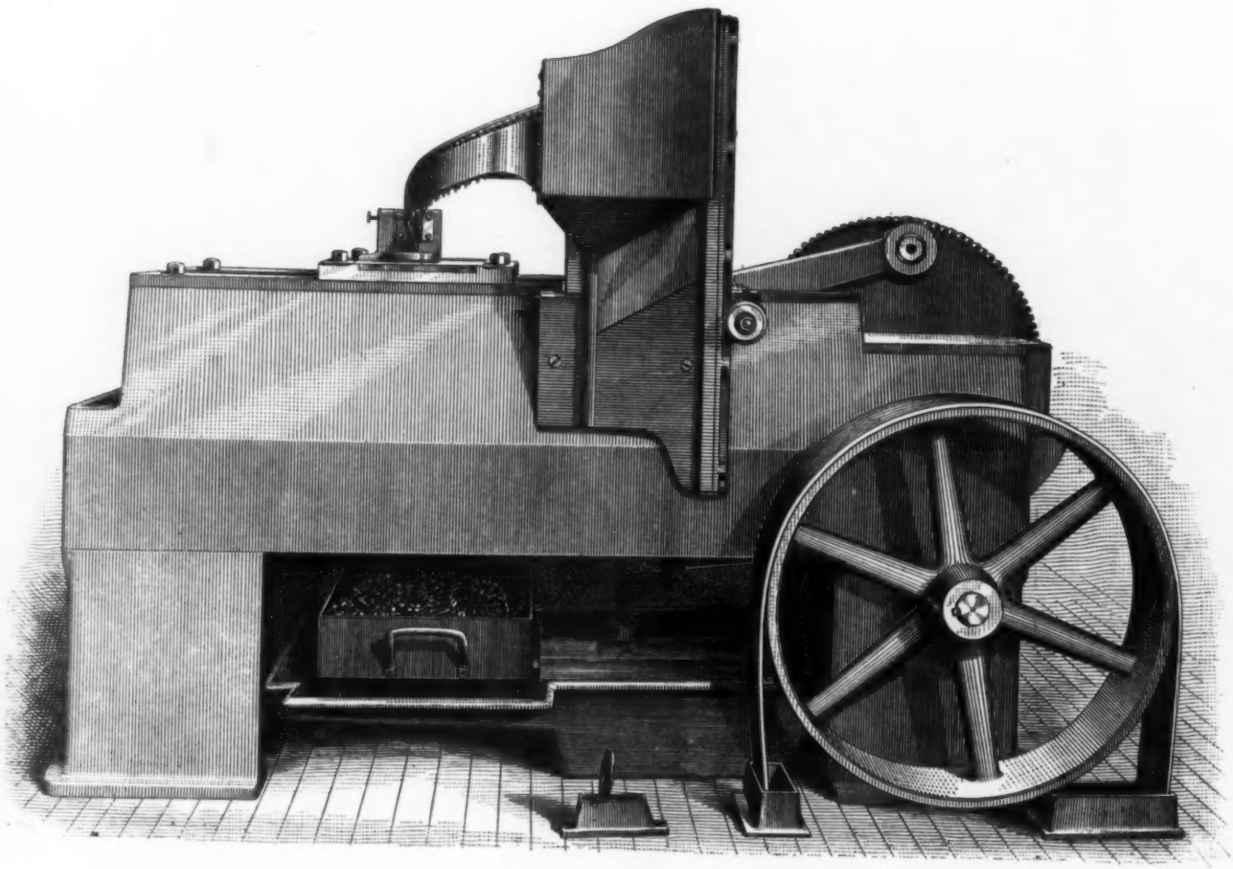
The Dayton Coal and Iron Company are one of the largest operators in the South, and is almost, if not entirely, owned in England. W. J. Isaacsen, of Cincinnati, is managing director and Geo. Jamme general manager. No expense has been spared in the plant and equipment, and there is every indication that under present management the enterprise will be a success. The town of Dayton, where this operation is located, is 297 miles from Cincinnati, and 38 from Chattanooga. Eight years ago it was an old field; now it is a place of fully 4000 inhabitants, the development being caused by the erection of the iron furnaces, the working of the coal and iron mines and the building of the Cincinnati Southern Railway. The plant consists of two stacks, one 75 feet high with 20 feet bosh, the other 75 feet high with 18 feet bosh. No. 2 has averaged in October 92 tons per day, and No. 1 averaged for the same time 85 tons per day. They are each equipped with three Whitwell fire-brick stoves and three Weimer blast engines. The first furnace was put in blast in 1886 and the second in 1887.

The coke ovens are 1⅛ miles from the furnaces, and the coal mines in the mountain over them. The original coke ovens erected here were built on a patented design in which the waste gas was used to heat the oven. Mr. Jamme took them out and used nothing but the plain bee-hive oven. Of these there are 250. There are two mines, one the Richland, the other the Nelson. The latter is by far their best and most reliable seam of coal, and must eventually be their dependence. It very regularly averages 4 feet thick, while the Richland is very variable, frequently running down to a small thickness. The output of these mines averages each about 1850 tons per week, almost all of which is made into coke.

The coke made here was for some time poor and very friable, but Mr. Jamme has introduced a machine called a disintegrator, through which he passes the coal before coking, greatly to its improvement. Coke made from coal not run through this machine is liable to be full of large pieces of slate frequently as large as one's hand, and, in handling, the coke was certain to break apart at those places where these pieces of slate were whether they were large or small. It is not claimed that the machine takes out the slate at all, but that it so finely disintegrates it that it is no longer perceptible to the eye, and that it is so disseminated through the coke that it does not affect its cohesiveness. The difference between the two cokes, disintegrated and non-disintegrated, is very apparent at a glance, and is clearly apparent in the working of the furnaces. On October 13, No. 1 stack running on coke from disintegrated coal made 101 tons of pig iron, while, on the common coke, under the same conditions of blast and weather, it only made 85 tons; No. 2 stack, running on coke from disintegrated coal, made 103 tons per day, while on ordinary coke she only made from 93 to 95.

The main entry in the Nelson mine is 2400 feet long, and is being continued onward. This company went about their work systematically, and, having an area of 80,000 acres, wanted to know what was under the surface. To this end they have had nine holes bored, and know the locality of the Nelson seam for several miles ahead. At 4200 feet distance it was found to be 6 feet 7 inches thick. Mining in the Nelson mine costs but little over half what it does in Richland; hence, when that mine has been sufficiently opened to fully supply their needs the cost of their coke can be very materially reduced. The number of miners employed is 400; and at the furnaces, 100; other hands, 200; a total of 700 employees. Thus we may safely assume that directly 4200 beings are dependent upon this enterprise which has grown out of a wilderness in less than 7 years. It is of value to the railroad in that its 1300 tons of iron per week must be carried away and fully 200 tons of ore brought in each week.

The company own a line of railroad to the Tennessee River, by which they bring in ore from the up-river mines, and on which is located one of their limestone quarries. They also have tracks to the coal mines and coke ovens and to another limestone quarry, all of the run being of standard gauge. The iron ore used is nearly all bought from outside parties. They use soft red fossil ore from Eureka mines (Welcker's) on the Tennessee River near Kingston; ordinary red fossil from Brown's, near Emory Gap; some soft ore from Attala, Ala., and a brown hematite from Georgia. They do not now use any of what is known as the hard red fossil ore. The average consumption is 2½ tons of ore to the ton of iron made, with 1.9 tons of coke, and 1 ton or less of limestone. North of Dayton, near Darwin, on land belonging to W. T. Darwin and Mr. Guess, leased by S. L. Wilkie, a seam of coal is being worked and a number of carloads shipped. He works about 80 hands. South of Dayton, at Graysville, a consider-



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The first mines on the line of railway after it reaches the Tennessee Valley are worked for iron ore of the red fossil variety. The foot of No. 1 mine is about 1 mile from the railroad station. It is operated by Col. Thos. Brown. The product averages 95 tons per day, and 35 miners and 8 outside men are worked. The distance to the railway is 610 yards, and loaded cars drop down by gravity. The mine is worked by a slope 400 feet long, the vertical hight being 235 feet. The vein ranges from 2½ to 5 feet in thickness, averaging above 4 feet. The ore at the depth of 235 feet below water level is found to be about as good as that near the surface.

No. 3 mine is 2 miles from the station, and is also operated by Col. Thomas Brown. There are 22 miners and seven outside men employed there, and the average product is 75 tons. The vein averages 3 feet 3 inches in thickness. It is 700 yards from the railway, and the cars drop down by gravity as at No. 1. Nearly all the ore from both these mines goes to the Dayton furnaces. Between Nos. 1 and 3 another mine is being opened by Brown & Tarwater. It connects to the main line by a wide-gauge track. At Rockwood Brown & Tarwater operate two mines, the product of which all goes to the Rockwood furnaces.

The Rockwood furnace was the pioneer in the manufacture of iron with coke in the South and the forerunner of the great industrial development now flourishing in the Southern States. The mines were opened and the first furnace erected in 1867 by Gen. J. T. Wilder and H. S. Chamberlan. The coal mined is entirely used in the two furnaces, at which and in the mines is worked a total of about 250 hands. The product amounts to about 60,000 tons per annum. This coal is in Walden's Ridge, an outer wall-like part of the Cumberland Mountain, where the coal and all other strata dip at an angle of about 45°. A part of the coal mined is made into coke, and some is used raw as in the furnace. Only one stack is now running, and the product is about 40 tons per day. The property belongs to the Roane Iron Company, Mr. M. Duncan being the superintendent. There is no doubt but that these furnaces have been the most regularly profitable of any in the Southern States.

The Dayton Coal and Iron Company are one of the largest operators in the South, and is almost, if not entirely, owned in England. W. J. Isaacsen, of Cincinnati, is managing director and Geo. Jamme general manager. No expense has been spared in the plant and equipment, and there is every indication that under present management the enterprise will be a success. The town of Dayton, where this operation is located, is 297 miles from Cincinnati, and 38 from Chattanooga. Eight years ago it was an old field; now it is a place of fully 4000 inhabitants, the development being caused by the erection of the iron furnaces, the working of the coal and iron mines and the building of the Cincinnati Southern Railway. The plant consists of two stacks, one 75 feet high with 20 feet bosh, the other 75 feet high with 18 feet bosh. No. 2 has averaged in October 92 tons per day, and No. 1 averaged for the same time 85 tons per day. They are each equipped with three Whitwell fire-brick stoves and three Weimer blast engines. The first furnace was put in blast in 1886 and the second in 1887.

The coke ovens are 1⅞ miles from the furnaces, and the coal mines in the mountain over them. The original coke ovens erected here were built on a patented design in which the waste gas was used to heat the oven. Mr. Jamme took them out and used nothing but the plain bee-hive oven. Of these there are 250. There are two mines, one the Richland, the other the Nelson. The latter is by far their best and most reliable seam of coal, and must eventually be their dependence. It very regularly averages 4 feet thick, while the Richland is very variable, frequently running down to a small thickness. The output of these mines averages each about 1850 tons per week, almost all of which is made into coke.

The coke made here was for some time poor and very friable, but Mr. Jamme has introduced a machine called a disintegrator, through which he passes the coal before coking, greatly to its improvement. Coke made from coal not run through this machine is liable to be full of large pieces of slate frequently as large as one's hand, and, in handling, the coke was certain to break apart at those places where these pieces of slate were whether they were large or small. It is not claimed that the machine takes out the slate at all, but that it so finely disintegrates it that it is no longer perceptible to the eye, and that it is so disseminated through the coke that it does not affect its cohesiveness. The difference between the two cokes, disintegrated and non-disintegrated, is very apparent at a glance, and is clearly apparent in the working of the furnaces. On October 13, No. 1 stack running on coke from disintegrated coal made 101 tons of pig iron, while, on the common coke, under the same conditions of blast and weather, it only made 85 tons; No. 2 stack, running on coke from disintegrated coal, made 103 tons per day, while on ordinary coke she only made from 93 to 95.

The main entry in the Nelson mine is 2400 feet long, and is being continued onward. This company went about their work systematically, and, having an area of 80,000 acres, wanted to know what was under the surface. To this end they have had nine holes bored, and know the locality of the Nelson seam for several miles ahead. At 4200 feet distance it was found to be 6 feet 7 inches thick. Mining in the Nelson mine costs but little over half what it does in Richland; hence, when that mine has been sufficiently opened to fully supply their needs the cost of their coke can be very materially reduced. The number of miners employed is 400; and at the furnaces, 100; other hands, 200; a total of 700 employees. Thus we may safely assume that directly 4200 beings are dependent upon this enterprise which has grown out of a wilderness in less than 7 years. It is of value to the railroad in that its 1300 tons of iron per week must be carried away and fully 200 tons of ore brought in each week.

The company own a line of railroad to the Tennessee River, by which they bring in ore from the up-river mines, and on which is located one of their limestone quarries. They also have tracks to the coal mines and coke ovens and to another limestone quarry, all of the run being of standard gauge. The iron ore used is nearly all bought from outside parties. They use soft red fossil ore from Eureka mines (Welcker's) on the Tennessee River near Kingston; ordinary red fossil from Brown's, near Emory Gap; some soft ore from Attala, Ala., and a brown hematite from Georgia. They do not now use any of what is known as the hard red fossil ore. The average consumption is 2½ tons of ore to the ton of iron made, with 1.9 tons of coke, and 1 ton or less of limestone. North of Dayton, near Darwin, on land belonging to W. T. Darwin and Mr. Guess, leased by S. L. Wilkie, a seam of coal is being worked and a number of carloads shipped. He works about 80 hands. South of Dayton, at Graysville, a consider-

able operation has been commenced. It is carried by Winchester & Ivins, who lease from Chas. J. Fox. Shipments have just commenced and about 30 hands are employed. A narrow-gauge track connects from mine to main line of railway.

The Walden's Ridge Coal and Coke Company, located near Sale Creek Station, is the next mining operation on the line of the railway. Of this company M. H. Clift is president; J. M. Clift, secretary, and A. Lloyd, superintendent. The product is 200 tons per day, and 150 miners and other hands are employed. They have 45 coke ovens and make 100 tons of coke per day from slack coal. The mine is one mile from the main line and connected to it with a wide-gauge track. The seam worked is not in the main mountains and has an average thickness of 4 feet. The Soddy Coal and Coke Company is the oldest mining operation on the line of the road. The coal having been worked there before the war, and afterward long before the railway was built, the coal having been hauled to the river on a modern tram and boated to Chattanooga. M. H. Clift is president, Robt. Morrison, vice-president, and J. T. Hill, secretary a nd treasurer of the company; A. Lloyd is superintendent at the mines. The product of coal is about 8000 tons per month, the number of employees being 375 miners and outside hands. They have 165 coke ovens, and make, when running full time, 2000 tons of coke per month. The company erected apparatus for washing the slack, but not finding that they received any increased price for the coke from washed slack abandoned the plant. The distance from the main line to the mine is three-fourths of a mile. The company's property comprises 8200 acres of land. The station on the railroad is called Rathburn, which is 21 miles from Chattanooga, but the name of the post office is Soddy.

The Daisy Coal and Coke Company is the next operation, being three miles nearer Chattanooga, and is the last one on the line of the railway. This mine was opened six years ago and failed. It was, after lying idle for some time, taken hold of by Tabler & Crudup; later they sold out, and it is now operated by Aydelotte, Williams & Price. The product amounts to an average of 200 tons per day, all of which goes to the Central Railroad, of Georgia; and 100 hands are employed. They have 50 coke ovens, but are now running only 25, the product going to New Orleans for foundries, and to the Citico Furnace, near Chattanooga. The seam worked is about 4 feet thick, and is one mile distant from the main line of railway, with which it is connected by a narrow-gauge track.

The Philadelphia Natural Gas Company, at Pittsburgh, has sent a confidential circular to all the leading manufacturers of that city who use gas supplied by that company requesting them to prevent waste of that fuel at their respective works. The request, the circular suggests, can best be carried out by the managers of the various plants instructing watchmen, furnacemen and other employees to shut off the gas from all furnaces or other parts of the mill when the latter are not running. A large amount of the fuel is wasted, it is claimed, by allowing it to burn at night and over Sunday when the factories are closed down.

The coke operators of the Connellsville region held several meetings in Pittsburgh last week and finally concluded to make no advance in the price of coke for the present month. There was great diversity of opinion among the operators as to whether there should be an advance, four of the largest producers favoring it, while several others opposed it.

New Drawing Press.

A new drawing press, suitable for making drawn tinware, kitchen boiler and soda-water tank-heads and similar work, is being brought out by the E. W. Bliss Company, of Brooklyn, N. Y. The engravings which we annex explain the nature of the design.

The press embodies one feature especially novel in a tool of this size, though it has been in use for a few months past in smaller machines built by the same company. This is the introduction of a peculiar system of toggle link-work for operating the blankholder or pressure-plate, which admits of the intermittent motion required to be obtained from the continuous rotary motion of the main crank-pin. The idea in itself of using toggles for the purpose mentioned is not new, the novelty lying in the special arrangement for operating them. About seven years ago the Bliss Company built a large drawing press for export to Switzerland, in which the blankholder was held down by toggles, but in this machine the toggles were secured by a sort of straight-faced cam carried by the continuously reciprocating cross-head, and the blankholder was lifted directly by the latter.

In the improved press which we illustrate no cams are used, as will be made clear by reference to the sectional view. The cross-head A, which carries the drawing punch, is actuated by side-rods from the main cranks B, of which there are two, one at each end of the main shaft. The crank-pin on the left-hand side of the machine is made long enough for a connecting-rod, C, which imparts a vibratory motion to the rock-shaft D at the rear of the machine. This shaft imparts a similar motion to the cross-head E, from each side of which extend short links to the toggles. It will be seen that while the crank-pin is moving from the position shown to the point F the rock-shaft, and consequently the cross-head E, will receive very little motion, and, as the links which connect this cross-head with the toggles lie in a position at right angles with the line of its motion, the toggle levers will receive a

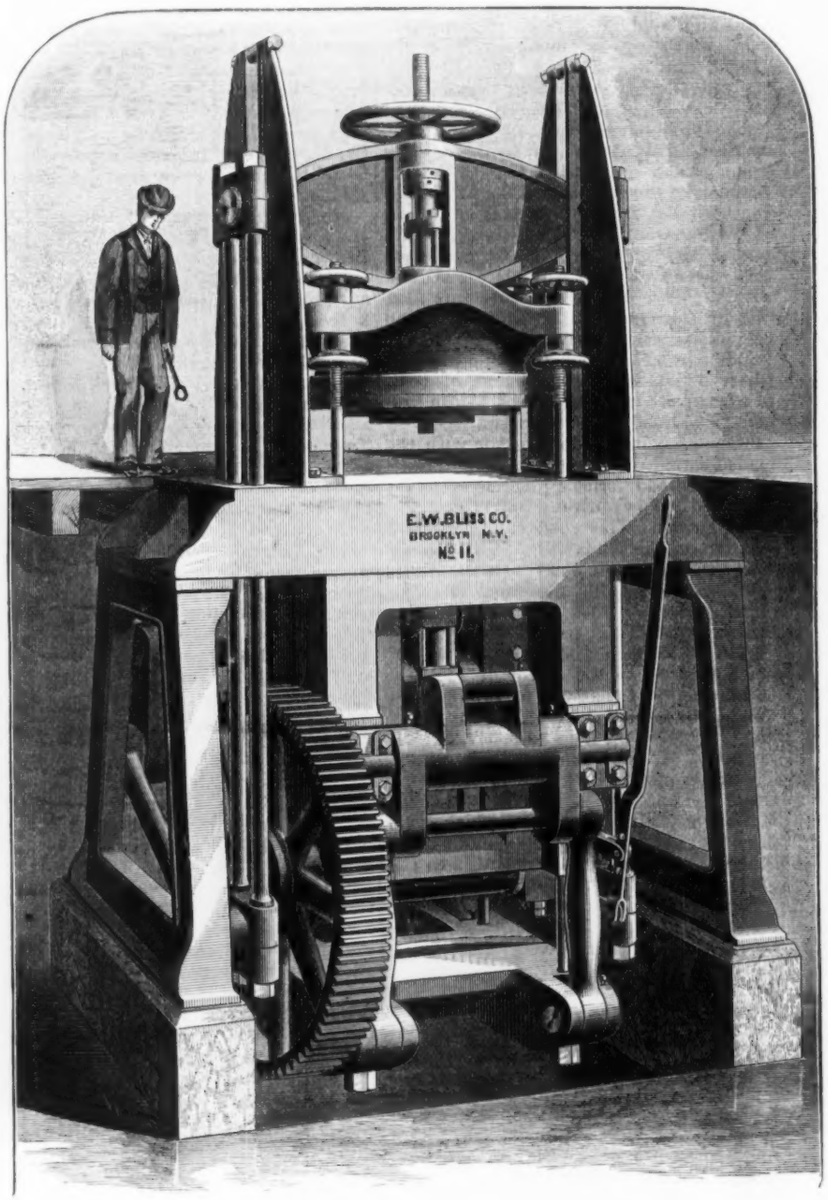


Fig. 1.—General View.

NEW DRAWING PRESS, BUILT BY THE E. W. BLISS COMPANY, BROOKLYN, N. Y.

very small lateral motion, which will have no effect upon the yoke G, to which they are linked; so that while the main crank passes through the part of its stroke mentioned the yoke G, and consequently the blankholder H, to which it is connected by four tie-rods, will remain at rest. As the crank passes its center, after having done its work, the cross-head E is thrown downward, and at its extreme position carries the toggles into a horizontal position, T K, thus lifting the yoke G and the blankholder. The press takes a blank 36

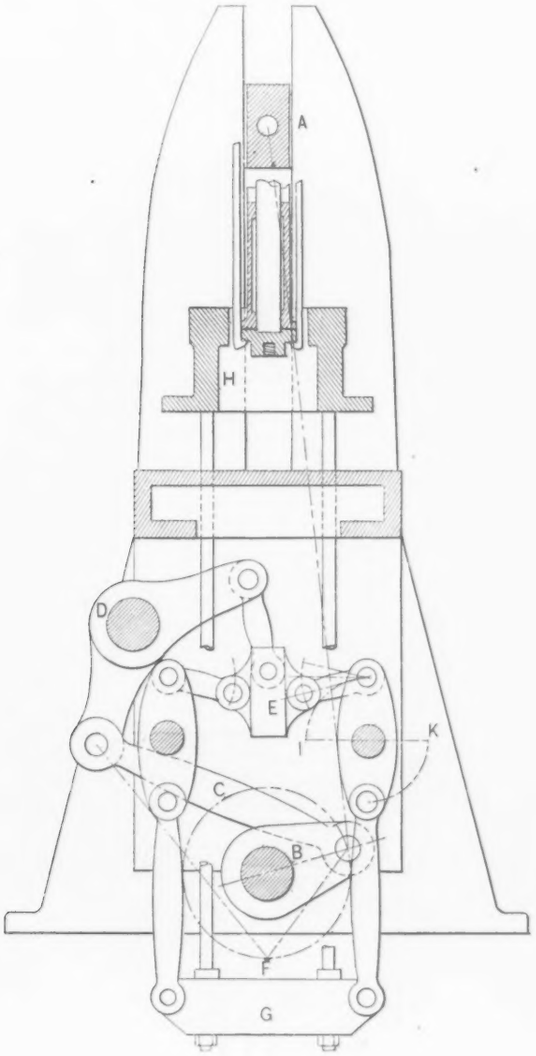


Fig. 2.—Details of Toggle Arrangement.

NEW DRAWING PRESS, BUILT BY THE E. W. BLISS COMPANY, BROOKLYN, N. Y.

inches diameter, and will work stock up to about No. 8 gauge. The stroke of the punch is 20 inches, and that of the blankholder is 14 inches. The main shaft is 10 inches diameter, and is made of forged steel. In all parts the press is built exceedingly heavy, with large bearings, enabling it to do extra work. The total weight is about 50,000 pounds.

The complete efficiency of a marine engine is the resultant of the separate efficiencies of the boiler, the steam, the mechanism and the propeller. To give a rough idea of the value of this, the first of these components may be assumed at 0.6, the second at 0.2, and the third and fourth combined at 0.5, so that the resultant efficiency is 0.06—that is to say, that only about $\frac{1}{16}$ of the energy of the fuel is used in the propulsion of the vessel; so that, notwithstanding the progress which has been made, there is still a wide field for the ingenuity of the engineer and the shipbuilder.

The Cost of Electric Street Lighting.

The following figures of the charges for lighting streets with arc lamps are of interest. They have been quoted from a communication of the Boston Citizens' Association, which was addressed to the Board of Aldermen of that city for the purpose of showing that Boston is overcharged for this service. For New York, the average price is given as 34⅛ cents per lamp for one night's service. Brooklyn pays 55 cents, Buffalo 45 cents, New Orleans 34 cents, Philadelphia 50 cents (average), and Baltimore 50 cents. Boston pays 65 cents. The Citizens' Association of Boston claim that on the 695 lights used in their city the reduction in cost of carbons from the figures of 1882 represents 25 cents per lamp for each night, an aggregate of about $60,000 per annum. The price of carbons in the last six years has fallen to less than one-third the original price. Yet Boston is now paying the same rate paid in 1882—65 cents per lamp. In 1887 the service cost $131,097.97. All of this, except $11,299.54, was received by one company. It seems very clear that Boston needs a little healthful competition. It is interesting to notice how important a factor carbons are in the cost of electric arc lamps. It seems like hoping for an impossibility to think of indestructible electrodes being possible, yet until some advance in that direction shall have been made the electric light will be far from perfect.

Seventeen-Inch Imperial Engine Lathe.

This lathe was designed by Messrs. Lodge, Davis & Co., of Cincinnati, Ohio, to meet the demand for a tool without extra attachments, and is essentially a manufacturers' lathe. The name of "Imperial" was given to distinguish it from their original line of lathes that have a full set of extra attachments. While the Imperial lathe will be without compound rest, taper attachment or automatic stop, the quality of the material and the workmanship will be fully up to the high standard of their original lathes.

After a most careful study of the true requirements necessary to produce a first-class tool, the builders decided that a solid bearing, bored taper, with the spindle turned from crucible steel, as hard as it can possibly be worked, makes the best possible construction. There is much less liability of its losing alignment, there can be no tinkering with half boxes, no looseness of spindle in bearings, but as near to absolute solidity as is attainable. The head is designed with a special view of securing great strength for end thrust. Being hollowed out sufficiently to make room for a cone pulley and belt, the front and back are carried as high up as possible, and webbed clear across from end to end, making two beams, well tied together, and capable of resisting the most severe end strains. Any wear on the spindle or bearings is taken up by drawing the spindle toward the back end. The part to which the adjustable screw is fitted is cast with and forms part of the head. Using solid bearings has been objected to on account of taking apart and putting together of the head. This difficulty has been overcome by a means of taking out the key that fastens the face wheel, through the hub. No difficulty whatever, we are told, is experienced in taking the lathe apart. This little matter, simple as it seems, has probably deterred many makers from adopting this construction. The screw cutting arrangement (which cuts from 4 to 20 threads to the inch) is driven from the spindle on the outer end. The reverse plate is made particularly strong, the studs being part of the plate itself, and therefore cannot become loose. Great care has been taken in this particular in order to make it meet the demands made on it when cutting heavy screws.

The gearing is arranged so as to be close to the bearings. The lead screw, which is directly under the front of the lathe, is engaged by two half nuts fitted directly to the carriage, not fastened to the apron, and the whole design is so arranged that no part depends on the strength of either bolts or screws when chasing. The opening and closing of the half nuts is performed by a cam of new design which is very simple, durable and effective, locking itself both ways and operated from the front. The feeding devices are of the most substantial character, and no worm or worm gears are used. The tool block is of substantial design, and has a bearing on the cross side of the carriage of 18 inches. The tool post has a bearing in a square shoe, bored out so as to give full bearing to resist the heavy strain of the cut and the continual tightening and loosening of the tool. The

front bearing tapers 1 inch in its length, and is 2⅝ inches in diameter. The lathe is furnished complete with all screw cutting gears, large and small face plates, steady and follow rests, and full countershaft, which has 12-inch tight and loose pulleys, and which should run 130 revolutions per minute. The lathe is made with 6, 8, 10 and 12 foot bed, and of 17-inch, 21-inch, 24-inch, and 30-inch swing.

A New Safety Lamp.

The important question of the application of electricity to miners' safety lamps was under discussion at the meeting of the Manchester Geological Society. Mr. Oswald Swete described a new safety lamp brought out by the Mining and General Electric Lamp Company of London. He stated that in 1885 a great advance in secondary batteries was made by Mr. D. G. Fitzgerald, who did away with the dead weight of support, and obtained a dense, hard, and highly conductive plate of solid peroxide of lead for his negative element, which he termed lithanode. It contains no support whatever, but consists wholly of active material, and a two-cell miner's lamp constructed with this kind of element will weigh from four to five pounds. The small weight of lithanode batteries brings them to the front for mining purposes, and besides this advantage there are others—no renewal of elements is required, no gases are evolved on discharging the current through the lamp, and there is therefore no necessity for valves or other complicated arrangements, while the present weight of the lamp, which is 5 pounds, can be considerably reduced. The electro-motive force is four volts, and it burns for twelve hours with one charge from a dynamo machine of five hours. The battery case is made of birch, occupying as small a space as possible, and rendered water and acid proof by a patented process. The glass protector covering the lamp is so arranged that in case of breakage the current is cut off before the blow that broke the cover can reach the incandescent lamp, and an explosion from contact with fire-damp is thus rendered impossible. The cover can be locked with a lead plug, as in ordinary safety lamps, and the action of putting on the cover lights the lamp, which the miner cannot put out except by breaking the sealed plug. By undoing four nuts inside the battery the whole of the elements can be instantly withdrawn when required for repair. So far the plates have been tested to two and a half years, and they are practically indestructible. The lamp can be turned upside down without detriment, and if turned at an angle does not go out. As to cost, he estimates 1000 lamps, with a 5-unit dynamo machine, instruments and wires, at £1090, and the lamps could be maintained at 2½d per lamp per week, burning 12 hours per day six days to the week. Mr. J. S. Burrows next gave the result of trials he had made of the Edison-Swan safety lamp, and, while fully recognizing the much superior light that was obtained from this lamp as compared with that given by the ordinary safety lamp, he said there were several important features requiring improvement. First and foremost is the heavy cost of the lamp, and in its construction there are one or two defects which ought to be removed, while it should also be more easy to repair than is the case at present. If this were done the lamp would soon take its proper place in the market for underground use.

A. H. Danforth has resigned from the position of general manager of the Colorado Coal and Iron Company, of South Pueblo, Col., and S. H. Dupuy, of New York, has been appointed to fill the vacancy.

The New Style Korting Double Tube Injector.

The new style Korting double tube injector which Messrs. L. Schutte & Co., Philadelphia, Pa., are now putting on the market, is, in several respects, a decided improvement on the older form and will at once commend itself to users of apparatus of this class. The engravings which we publish in this issue illustrate both types, and afford a ready means of comparing the two and understanding more clearly wherein they differ from each other. The older form we have thus reproduced at the risk of being charged with repetition.

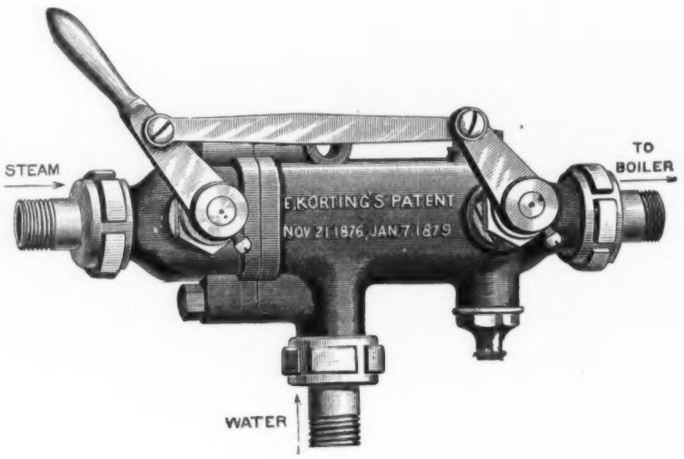


Fig. 1.—General View.

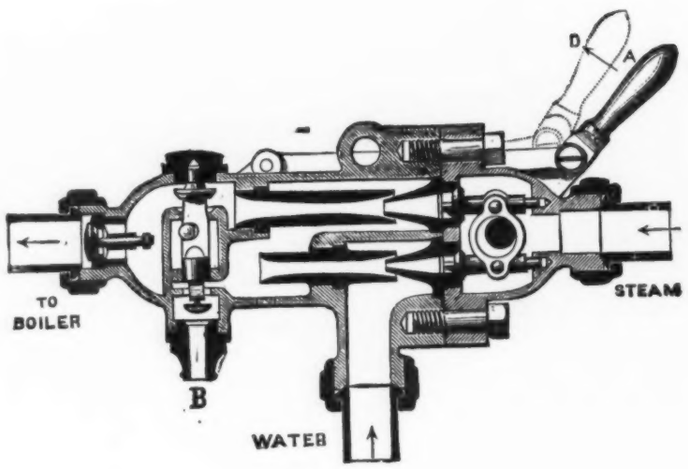


Fig. 2.—Longitudinal Section.

THE OLD STYLE KORTING DOUBLE-TUBE INJECTOR.

The double-tube feature itself, used in both designs, offered important advantages over the single-tube construction of the general class of injectors, and insured good work where other boiler feeders failed to operate, besides making adjustment with varying steam pressure unnecessary. The earlier injector, however, as shown in Figs. 1 and 2, was arranged with a side lever for operating, and accordingly was turned out in right and left hand patterns, and the steam and over-flow valves were worked by inside eccentrics. In the new form the whole arrangement has been much simplified, and the injector is now practically universal, there being but one standard form, with no occasion for right and left hand connections, and it is applicable both for Stationary and Marine Boilers and Locomotives. The exact nature of the improvement becomes apparent from Figs. 3 and 4, the latter, like Fig. 2, representing a longitudinal section. It will be noticed at once that the operating lever has been placed at the front and the steam connection has been changed from the side to the top. All the working parts, moreover, are on the outside and are more direct in action. The tubes themselves slightly converge. A specially interesting feature of the improvements is found in the mechanism for opening the steam valves. In the position shown in Fig. 4 these valves are closed, but by simply drawing the handle A over toward the position indicated by the dotted lines D, the valve of the lower or lifting nozzle, guided in one of the plugs or caps K, is opened through the intervention of a cross bar. Owing to the presence of a small amount of lost motion in the cross-piece connections, this valve can be opened appreciably while the upper valve still remains closed under the pressure of the entering steam. The latter, flowing through the lower nozzle, lifts the water through the tube; as soon as the water appears at the overflow B, the handle A is drawn over still further, closing the overflow valve through the bell crank on the outside (see Fig. 3) and opening wide the lower as well as the upper steam valve. The injector is then feeding into the boiler, the lower tube lifting and the upper one

forcing, the water. We need not specially comment on the new arrangement of working the steam and overflow valves as compared with the older inside eccentric movement. Its simplicity will no doubt be generally appreciated. The whole work of operating the injector in the new as well as in the old form is accomplished by means of only one handle, and there are no separate valves to give rise to confusion. The dirt stop, shown at the right, can be readily removed from the feed pipe in case cleaning should become necessary. The new injector, we would add, is turned out in 16 sizes.

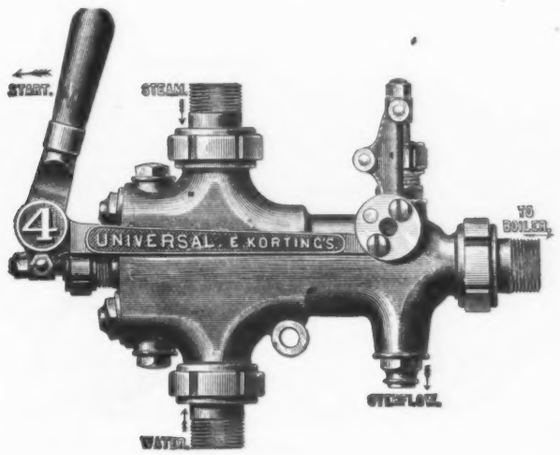


Fig. 3.—General View.

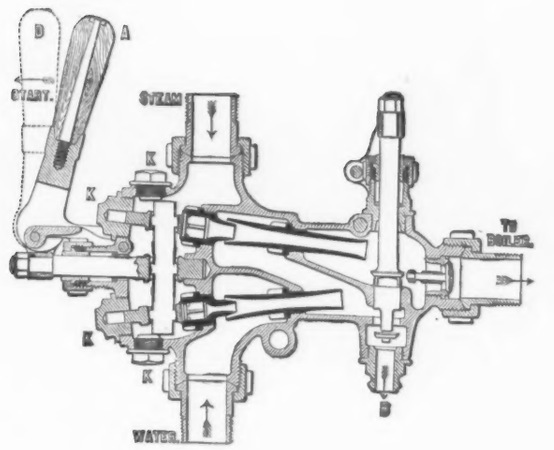


Fig. 4.—Longitudinal Section.

THE NEW STYLE KORTING DOUBLE TUBE INJECTOR.

The Cast Pipe "Trust."

Peter D. Wanner, president of the Mellert Foundry and Machine Company, and of the Reading Foundry Company, among the largest manufacturers of cast-iron pipe in the country, has written a letter to United States Senator John R. McPherson, of New Jersey, denying the statement made by the latter in the Senate, recently, to the effect that the cast-iron pipe industry had formed a trust, under which the price was to cover the foreign cost, the duties and all expenses. Mr. Wanner says the assertion is unwarranted, and that not only has no trust been formed, but competition is so keen that there have been but two profitable years in the trade since the panic of 1873.

He says the duty on pipe has afforded no protection to this industry, except in so far as it has permitted the pipe used to be made in this country instead of imported. In the meantime it has furnished employment to a large number of people, has built up large works, and to all that extent has benefited and increased the wealth of the country. Continuing, Mr. Wanner said: "Such statements as the one above complained of might be permitted to go unnoticed were it not for the fact that they put the members into a bad light before the consumers, who believe that they pay too much for what they buy, and also with their employees, whom they lead to believe that they are not properly remunerated for their work." In closing, Mr. Wanner trusts Senator McPherson will withdraw the objectionable statement. As no attention was paid to the letter Mr. Wanner gave it out for publication.

A bill before the South Carolina Legislature assuming that some of those who are benefited by cotton fires on shipboard are responsible for them and arouses very bitter feelings among those interested.

NEW PUBLICATIONS.

ANNUAL REPORT, State Geologist (Vol. 1), on the Geological Survey of New Jersey.

The first of final series of reports by the Geological Survey of New Jersey has just appeared. It deals exclusively with the topography and climatology of the State, and refers at some length to magnetic survey. The report, which is the compilation of Prof. George H. Cook, the State Geologist, is accompanied by a handsome map showing the elevations of different parts of the State above tidewater.

THE LAKE SUPERIOR COPPER PROPERTIES. By Henry M. Pinkham. Printed for the Author, Boston. Price 25 cents.

Mr. Henry M. Pinkham, who is connected with the financial press of Boston, has lately published a pamphlet descriptive of the copper mining properties of Lake Superior, taking up in turn the financial history of every leading mine in that famous section. The record is one of which Lake Superior may well be proud, the total dividends of the copper companies since copper was first found, aggregating $46,421,120. The details are submitted below:

RECAPITULATION.

Calumet	$300,000
Hecla	650,000
Calumet and Hecla	29,900,000
Total	$30,850,000
Atlantic	480,000
Central	1,890,000
Copper Falls	100,000
Franklin	600,000
Minnesota	1,826,000
National	320,000
Osceola	1,222,500
Pewabic	460,000
Phœnix	20,000
Pittsburgh and Boston	2,518,620
Quincy	4,710,000
Ridge	100,000
Tamarack	440,000
Total	$46,421,120

The facts still remain, however, and to which Mr. Pinkham does not allude, that the sums of money sunk in unprofitable ventures since the discovery of copper on the Peninsula have been very large.

THE MINERAL RESOURCES OF THE UNITED STATES, by David T. Day, Chief of Division of Mining Statistics and Technology. Published by the United States Geological Survey, J. W. Powell, Director, Washington, D. C., 1888. Price, 50 Cents.

The fifth volume of the mineral statistics of the United States, collected by the Geological Survey, has just been published, covering the calendar year 1887. In its general scope, and in the *personnel* of its compilers, it has remained largely the same. Mr. James M. Swank has furnished a chapter on iron, some parts of which have already been printed from advance sheets in the technical press. Mr. John Birkinbine, of Philadelphia, deals with iron ore mining in 1887, reviewing in detail the leading districts throughout the country. He quotes a good many new analyses, and furnishes considerable data, among others brief references to ore concentration. The chapters on copper, lead, and zinc have been written by Mr. C. Kirchhoff, Jr., while manganese, coke, natural gas, and petroleum are from the pen of Mr. Joseph D. Weeks, of Pittsburgh. By far the most extensive single contribution is that of Charles A. Ashburner, on coal, that, probably, being the most thorough collection of coal statistics yet attempted in the United States. Exclusive of the colliery consumption, Mr. Ashburner makes the total production of coal in the United States 130,000,000 tons, the colliery consumption being placed at 6,000,000 tons. Mr. Ashburner takes up State by State, and furnishes a wealth of detail which will prove particularly valuable. Among the other contributors are Mr. R. L. Packard,

on aluminium; Wm. C. Day, on structural materials; George F. Kunz, on precious stones; W. A. Ramborg, on salt, and A. C. Peale, on mineral waters. The special feature of the work this year is a list of useful minerals of the United States, edited by Albert Williams, Jr. The minerals are arranged by States, their mineralogical name and common name being given, as also the locality. While it is not claimed to be complete, it is certainly very elaborate and extensive.

Fifth Annual Report of the Inspector of Mines of Kentucky.

The fifth annual report of the Inspector of Mines of Kentucky is at hand. The book gives information of the various railroad extensions, especially those reaching into the coal districts of the State. It shows that coal mining has increased very much over previous years, and that the condition of the mines is more satisfactory and safer. Various means and devices for labor-saving are illustrated, as well as the designs for ventilation and handling the coal after it comes to the surface. A careful description of all the works in the State is given, and various comparative tables, showing the high value of certain coals for steam and other purposes. The great lack so far is good coking coal, but this, it is said, will be completely overcome by the opening up of the deposits in the Cumberland Gap region; but whether this coke can be carried to the furnaces in Tennessee and Alabama at a profit to the ovens and cheap enough for the consumers remains to be proven. For the year 1887 Kentucky produced only about 2,000,000 tons of coal, Illinois 10,000,000, Ohio 11,000,000 and Pennsylvania 30,000,000, and yet it is asserted that Kentucky has more coal area than the great coal State, showing, if this is a fact, that coal mining is hardly begun there yet. The cannel coal of Kentucky is widely known for its gas-producing qualities, and in certain sections of the State it lies so as to be easily and profitably worked. During the first six months of 1888 over 23,000 tons were mined, and 20,000 tons were shipped to points out of the State.

A "Tower Building."

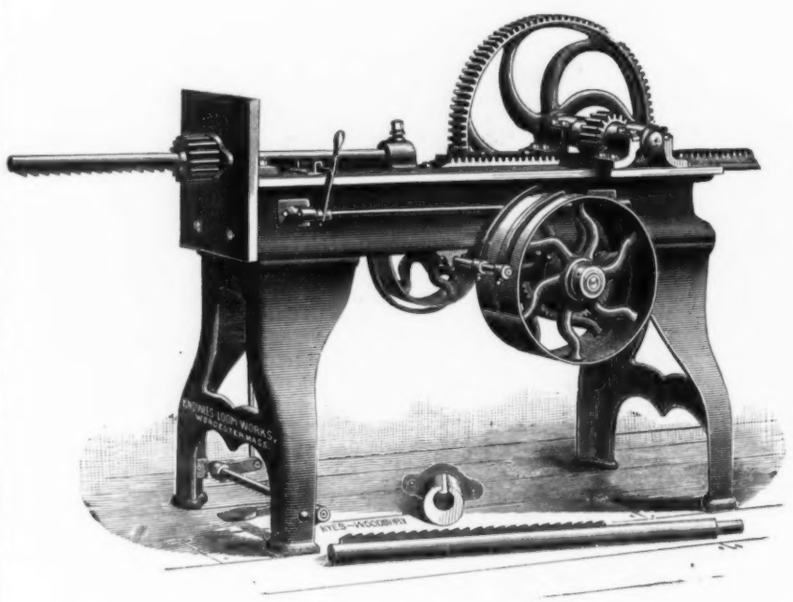
J. Noble Stearns, the largest silk manufacturer in New York, realizing the increasing demand for well equipped offices, has erected a 15-story building in the vicinity of the New York Stock Exchange, at 50 Broadway. This building presents a striking appearance, since, although it widens as it runs through to the next street, the width of the Broadway lot on which the front part of the building stands is only 21½ feet, and, as the adjoining buildings are only four stories high, the tower building towers, in every sense of the word, above the entire neighborhood.

The interior arrangements of the building will be such as to make it a model office building. A series of pneumatic tubes will be so connected that messages may be sent to and from any floor in less than a minute. A mail shute will be placed on each floor so that letters may readily be dropped into the post-office mail box on the ground floor. The elevators will be of the Otis make. The entire building will be heated by a radically new method of steam heating, known as the Hussey reheater system, which reheats the exhaust steam and utilizes the reheated steam for heating; by this method the work can readily be accomplished by one boiler; two being required by any other plant.

There will be an improved electric light plant. The Hussey ReHeater and Steam Plant Improvement Company of 15 Cortlandt street, New York, have the contract for placing the entire steam plant, including boilers, pumps, tanks, re-heater, steam pipes, radiators, &c. In order to economize room which is most valuable in that part of the city, the boilers will be placed under the sidewalk. Every room will have especially designed radiators, and the steam will be automatically regulated by an electric combination, therefore necessitating no attendance from occupants of offices. The building is entirely fire proof.

New Slotting Machine.

The Knowles Loom Works, of Worcester, Mass., are bringing out a new slotting machine, built in two sizes. The piece to be slotted is placed on a bushing upon a face-plate, and the slot cut by a single passage of the cutter in from 10 to 20 seconds. The slots may be made straight or of any taper required by a change in the bushing upon which the work is placed. One great saving of time is affected by the use of this machine by the circumstance that the work does not have to be fastened to the machine, but is immediately brought to position and held by the bushing, through which the cutter passes. The same size of slot can be put into any number of different sized holes by means of eccentric bushings. Slotter No. 1 will cut a slot 6 inches long, ⅝ inch wide, $\frac{5}{16}$ inch deep, and No. 2 a slot 12 inches long, 1 inch wide, ½ inch deep, at a single passage of the cutter-bar. The machine will slot any piece less than 6 feet in diameter as it stands on the floor, and more than that by having a pit for the casing to swing in. Much larger slots can be cut by using two cutters, taking out a part of the stock with one cutter and finishing to proper size with a larger one.



NEW SLOTTING MACHINE, BUILT BY THE KNOWLES LOOM WORKS, WORCESTER, MASS.

Rand, McNally & Co., the well-known publishers, of Chicago and New York, will issue next month a new edition of their Indexed Business Atlas of the United States, Canada and Mexico. It will comprise in all 92 maps, corrected to date, to show new post offices and railroad stations. A new feature will be that each railroad will be shown in a distinct color. The price will be $12.50.

The Standard Coins of the World.

Dr. James P. Kimball, Director of the Mint, has estimated the values of the standard coins of the various nations of the world, for publication January 1, 1889. The values of the gold coins have been ascertained by comparing the amount of pure gold in each with the amount in the gold dollar of the United States. The silver coins of countries having the double standard have been given the same valuations as the gold coins of such countries with which they are interchangeable. The values of the silver coins of countries having the silver standard have been ascertained by taking the bullion value of the pure silver contained in such coins based on the average price of silver in London for the period commencing October 1, 1888, and ending December 24, 1888—namely, 42.911 pence per ounce, British standard, equivalent, at the par of exchange, to $0.94066 per ounce fine. The value of silver for the corresponding period of last year was $0.96645, a decline of a little over 2½ cents per ounce. The decline in the price of silver occasioned a change in the estimated values of the following coins:

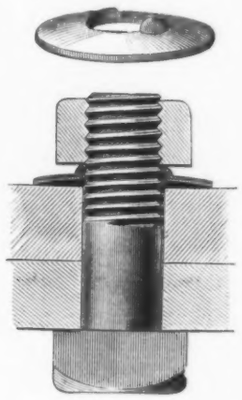
Coins.	Value Jan. 1, '88.	Value Jan. 1, '89.
Florin, of Austria.....	$0.345	$0.336
Boliviano, of Bolivia....	0.699	0.680
Sucre, of Ecuador.....	0.699	0.680
Peso, of Guatemala.....	0.699	0.680
Peso, of Honduras.....	0.699	0.680
Rupee, of India.....	0.332	0.323
Yen, of Japan.....	0.753	0.734
Dollar (Peso), of Mexico.	0.759	0.739
Peso, of Nicaragua.....	0.699	0.680
Sol, of Peru.....	0.699	0.680
Rouble, of Russia..	0.559	0.544
Nahbub, of Tripoli.....	0.630	0.614
Dollar (Peso) of U. S. of Colombia.....	0.699	0.680
Bolivar, of Venezuela...	0.140	0.136

Shipbuilding in Maine continues depressed, although that State still holds the supremacy in turning out wooden vessels. During the year there have been built 54 vessels of all rigs, aggregating 16,173 tons, against 41 vessels, with a total of 17,454 tons, built in 1887. At Bath, the principal wooden shipbuilding port and the largest in the world, there have been built 24 vessels, with a total tonnage of 10,035, against 20 vessels, aggregating 10,319,

built in 1887. There were built 18 schooners, with a total of 8524 tons; 5 steamers, 855 tons, and 1 bark of 555 tons. At East Boston, Mass., there has been more activity than before for many years, the demand being for schooners in the coastwise trade.

Improved Lock Washer.

A year or two ago we had occasion to present to our readers a description and illustration of a simple and effective lock washer brought out by the National Lock Washer Company, of Newark, N. J. The principle of the washer was applied in two different forms, one being intended for heavy work, as for example, in connection with track bolts, heavy machinery, &c., and the other for lighter work, and also for use in securing carriage bolts and in connection with wood and metal work in general. This latter form was a dished spring washer, provided with a rib extending entirely around its inner edge, and projecting outward, so as to act on the face of the nut, which was screwed down upon it, so that, on the washer being flattened out against the surface of the work through which the bolt was inserted, a portion of



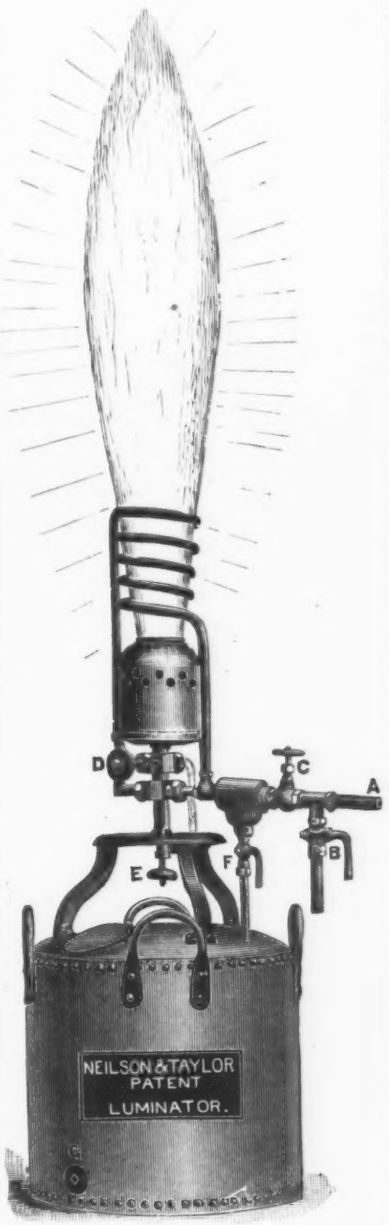
Improved Lock Washer for Woodwork.

he metal of the nut was forced against the bolt, effectively locking the nut and guarding against its working loose.

Since then the Company have made some improvements, which are embodied in the washers shown in the annexed engravings. The principle has been retained, but it will be noticed that the inner edge of the dished washer, instead of being provided with the previously mentioned rib, has two projections, which are spirally inclined in the opposite direction from that of the threads on the bolt. By this arrangement these projections perform the displacing function upon the metal of the nut as the latter is screwed home. The pressure with which the dished washer bears upon the surface of the work while the nut is being screwed on is in the new arrangement greatly diminished, and the adaptability of the washer is therefore much increased for employment with nuts and bolts used in wooden structures, as there is a diminished tendency of the upper edge of the washer to indent itself into the wood. The importance of this point will be readily appreciated. The smaller of our engravings shows a partial top view of the washer, with the displacing projections clearly defined. The larger of the cuts represents a washer in position, with the nut ready to be screwed down upon it. From the engraving it can be understood with little difficulty just what will happen when this is done. The washers, so far as we know, have given excellent results since their introduction, and are turned out, we understand, at a relatively low cost.

A Steam Lamp.

Messrs. Lean & Blair, of Pittsburgh, Pa., are putting on the market what will be known as the improved "luminator," and which, in effect, is a steam lamp for burning cheap creosote and other heavy non-explosive hydro-carbon oils in conjunction with steam or air. We understand that it gives an intense white flame, shedding a great amount of light, and is, accordingly, recommended as a most suitable and



Steam Lamp, Made by Lean & Blair, Pittsburgh, Pa.

economical light for foundries, boiler sheds, engineering works, shipbuilding yards and other similar establishments.

The manner in which this lamp works will be understood without much explanation, the construction being simple and the engraving quite clear. We may say right here that either compressed air or steam may be used, the results in either case being eminently satisfactory. The steam or air supply pipe is connected at A and the drain cock B is opened until steam or air passes freely. The cock is then closed and the valve C opened wide, allowing steam to pass through the luminator. The quantity of steam or air is regulated by the valve E, giving a little to begin and then increasing or diminishing the quantity as required. The oil supply is regulated by the valve D. If the oil gets thick and cloggy by frost, the cock F should be left slightly open, so as to allow a small drip of water to pass, and so heat the oil by the pipe passing through the tank. The cock F should be shut off if the oil is getting too hot. The oil tank should be washed out with hot water occasionally by plug C. To put out the light, shut off steam or air at C, and open F.

The light is under perfect control and requires no skilled attendant. The lamp can be lighted or extinguished instantly. The consumption of oil varies from about 1.6 to 2 gallons per hour.

A Record of the Smith Heating Furnace.

We are indebted to Alex. Laughlin & Co., of Cleveland, for the following record of the product and fuel consumption of a 7 x 16 foot Smith heating furnace recently completed by them with the necessary gas producers at the works of the Ohio Iron Company, Zanesville, Ohio, under a guarantee as to fuel consumption:

		Size of Bar.		Weight of Finished Iron.	Hoppers of coal used, at 70 lbs.
1888.					
Dec.	4	2½ x ¾ in., flat	....	35,677	65
	5	2½ x ¾ in. "	12,295		
	5	2¾ x ¾ in., guard.	23,850	36,145	61
	6	2¾ x ⅝ in. "	25,025		
	6	1½ in., round.	11,335	36,360	64
	7	1 " in. "	5,519		
	7	1½ in., square	5,635		
	7	1⅜ in. "	14,520		
	7	1 in., "	12,330	38,004	61
	8	1¾ in., round.	5,660		
	8	2¼ in. "	3,010		
	8	2½ in. "	2,815		
	8	2⅝ in. "	2,960		
	8	2⅞ in. "	1,400		
	8	3¾ in., round, steel.	1,230		
	8	4 in. " "	5,685		
	8	1¼ x ⅞ in., flat	945		
	8	1½ x ¾ in. "	2,450		
	8	1½ x 1¼ in. "	975		
	8	2 x ½ in., "	730	27,860	57
	10	2 x ⅝ in. "	14,570		
	10	2 x ⅞ in. "	9,505		
	10	2½ x ½ in. "	7,170		
	10	2½ x ¾ in., "	10,625	41,870	63
	11	2½ x ¾ in., round.	12,122		
	11	1¼ in. "	18,120		
	11	1½ in. "	5,880	36,122	54
	12	2¾ x ⅝ in., guard.	28,323		
	12	1⅛ in., round.	11,876	40,199	60
	13	1½ in. "	10,395		
	13	1⅜ in. "	5,830		
	13	1⅛ in. "	14,645		
	13	1¼ in. "	1,435	32,305	66
	14	3 x ⅝ in., flat.	19,470		
	14	3 x ¾ in., "	1,400		
	14	3 in., flat.	7,130	4,0600	62
		Total	....	365,142	613

This 182½ tons finished iron with 46,588 pounds slack coal, making an average of 255 pounds to a ton of finished iron.

The coal used costs but 62½ cents per ton delivered at the works, or 8 cents for each ton of iron heated, and the wages of the gasmaker cost $1.65 per day, or about 7½ cents to each ton of iron heated, making a total cost of 15½ cents per ton, which is believed to be somewhat lower than any of the natural gas companies are charging. The iron was rolled on a 16-inch two-high bar mill, while a great deal of it should have been rolled on a 10-inch three-high mill. There was no telegraph from the furnace to the rolls, so that all the iron had to be run down on a buggy. These disadvantages together make it impossible for the rolls to take all the iron which the furnace could heat, and at the same time there was not a man about the furnace who had ever worked a gas furnace before.

THE WEEK.

Philadelphia is discussing the expedience of buying an electric lighting plant, which it is claimed would reduce the cost per lamp to about 17 cents, instead of about 50 cents per lamp, as at present. The plant would cost $120,000.

The Governors of eight of the largest Southern States have, in compliance with a request from C. H. Wells, filled up blanks with official figures showing the progress made by the respective States during the last eight years. Georgia and South Carolina alike show the greatest increase in manufacture of cotton In iron making Georgia also shows wonderful progress, and diversified small industries have been fostered with excellent results. Alabama's largest increase is in iron, with lumber, coal and quarrying close behind. In the line of manufacture Texas has shown the greatest increase in the making of iron and the converting of it into useful articles. Lumber comes second, flour milling third, with canned fruits next. In lumber manufacture Arkansas has made the greatest headway since 1880, cotton oil making coming second and mining third. Virginia's growth has been in the line of iron working and mining, as well as lumber cutting, wood working, and flour milling. In respect of assessed valuations Texas shows the largest gain, equal to $354,600,000 in eight years. Alabama comes next with a net gain of $92,039,000. Adding all the figures together the gross gain in eight States in eight years is $794,900,000.

Lumbering in the Dominion has suffered a collapse since the election in the United States, enormous accumulations having been made in anticipation of free exports. The reaction is intensified by the imposition by the Government of an increased export duty on pine logs. Several American firms who bought timber on Georgian Bay in expectation of rafting the logs across the lakes to Michigan are severe sufferers.

The growing importance of steamship lines in the coastwise trade appears in the single fact that there are now five steamers a week between New York and New Orleans and at least 20 steamers are plying between New Orleans and Central America. Ten years ago there was barely one. In trade with Cuba and Mexico there is an equal growth.

The construction of the Naval Observatory at Washington City will be commenced in the spring.

New York manufacturers of domestic woolen goods about a year ago subscribed $30,000 for the services of a special agent to be stationed at the custom houses to assist in the prevention of fraudulent valuation, and the report just made of the results causes much dissatisfaction among importers. Complaint is made with good show of reason, and it is claimed "that no agent of any domestic manufacturer ought ever to be allowed to handle the goods or to inspect the invoices of the importers. Experts should be employed, but they should be the sworn officials of the Government, and under no circumstances should the trade secrets thus laid bare to them be exposed to public gaze, much less to the rivals of those who own the goods."

The continued depreciation of silver works mischief in the trade of Mexico. When the Mexican dollar, worth intrinsically more than the Bland dollar, gets down to 73 cents in New York, as at present, and silver bars are quoted at 42⅞ in London, many important interests are seriously affected. A Mexican correspondent says: "Mexico is now importing $50,000,000, silver value, of foreign goods, some $26,000,000 of which comes from Europe and $24,000,000 from the United States. To meet this big bill she exports products other than silver about $18,000,000 according to recent figures. The balance of $32,000,000 goes out in silver. It is this condition of affairs which the united chambers of commerce of the country, combined in one association, known as the Mercantile Confederation of the Republic, are studying with great care. The confederation has been holding sessions during the past three weeks, and has, in a a series of reports, gone into the matter with a boldness which will compel the Mexican people to stop and think seriously. The reports urge that the true remedy for overcoming the evil results of the continual drop in silver is to export more and more of products which, in relation to gold, the universal measure of values, have not depreciated, while some have risen, as for example, henequen and coffee."

The great work contemplated in the excavation of the Cape Cod ship canal at Sandwick, Mass., is the severance of the far-reaching peninsula from the main land, shortening the inside route from Boston to New York 76 miles, and the outside route 130 miles. During the last year nearly one mile was dug by a single steam dredger operated by 12 men, not quite seven miles remaining to be cut through. When finished, the canal will be 200 feet wide on top, 75 feet on the bottom, with an average depth of 23 feet at low water. There will be no locks.

Andrew Carnegie, the "Iron King," is said to have made his first big money in the oil business. He was one of the principal owners of the Story farm, on Oil Creek, Pa., which is estimated by practical oil men to have produced in the 20 years since the first discoveries were announced oil to the value of $9,000,000 to $10,000,000. In a single year the production of the farm was 141,508 barrels.

Philadelphia editors are now confident that the proposed improvement of League Island, as the site of a naval station, will be carried into execution. The cost will not be less than $4,000,000.

Germany and England vie with each other in supplying Brazil with machines and machinery. A Berlin paper expresses dissatisfaction that their British rivals have acquired such an advantage, and recommends the exporters at home to keep the importers in Brazil well supplied with catalogues illustrative and descriptive, and lists of the German manufacturers' prices printed in either the Spanish or Portuguese languages, or both. They are also recommended not to attempt to deal direct with the Brazilian shopkeepers, but through German commission houses, who are able and willing to obtain good orders at a small commission and free of all risk to the manufacturer by the sole assistance of samples, catalogues and price lists. Goods should also be packed very strongly, and into as little space as possible. Americans may profit from these hints.

A strong effort will be made in the next Congress to provide for a deep water port on the coast of Texas, the location to be selected by a commissioner.

The City of Mexico is negotiating a loan of $10,000,000 in London, for the purpose of carrying into execution the plans for building a great drainage tunnel, introducing water and improving sewers, upon which engineers have been engaged for some time past.

The net debt of the State of New York is less than $3,000,000, there being $4,000,000 in the Sinking Fund.

Electricity for car propulsion is gaining favor in this city. In Fulton street, east of Broadway, may be seen a section of the new cross-town electric railway. The current will be conveyed to every car from the powerful dynamo at Burling Slip by means of two parallel copper bars suspended a few inches beneath each rail. A direct and constant connection will thus be maintained between the source of power and the car through a narrow slot which permits the free movement of a conducting rod. The Fourth Avenue line promise to have a dozen of the Julien electric cars running before the close of the winter.

The more general use of natural gas in Ohio and Pennsylvania has necessarily driven a large amount of bituminous coal out of those States to more distant markets.

It is a curious fact, if it be one, as now affirmed, that labor organizations as a whole, during a long term of years past, have not secured for themselves a higher rate of wages than is realized by workmen who have remained independent, seeking for themselves individually such compensation for their services as they might be able to command through an equitable agreement with the employer. Considering the enormous amounts of money that have been expended by associated workmen in maintaining organizations and aiding those of their fellows who went out "on strike," the practical operation of the two systems of labor, as thus indicated in results, affords a lesson of the deepest significance. It demonstrates yet again the difficulty of running counter to natural laws governing supply and demand throughout the whole realm of mundane affairs.

Foreign immigration into the United States during 11 months of 1888 did not quite reach 500,000, and the total for the year will probably exceed that of 1887 only about 10,000.

Commissioners have left Washington to locate a navy yard on the Pacific Coast above the 42d parallel.

The new city hall in course of erection in Richmond, Va., is of James River granite and will cost $700,000. The population of the city is about 85,000.

Sales of real estate in Tacoma, W. T., during the year amount to $8,250,000 and the boom is still on

The East River Bridge has become a wonderful thoroughfare, in this respect repeating the experience of the elevated railroads, the business done exceeding by far anything that the most sanguine predicted. The aggregate number of passengers for the year was 33,116,000, showing an excess of 2,500,000 over the previous year. The receipt from tolls amounted to $917,961, of which sum the railroad yielded $833,700.

Work on the steel and iron railroad swing drawbridge which the Stonington and Providence Railroad Company are now swinging across the Thames River at New London will be somewhat delayed by the loss in Long Island Sound of a timber raft which had been towed from Georgia through the canals.

Many railroads are projected or in course of construction on both banks of the Hudson, in the vicinity of the Poughkeepsie Bridge Among them are the eastern connections to the bridge, a line from Campbell Hall to Highland, one from Greycourt to Burnside, the Newburg and Wallkill Valley Line, the road from Brewsters to Anthony's Nose Bridge, and one from Fort Montgomery to Turners.

The long-continued depression in the raw silk market and the recent rise may make a synopsis of this market for some years back interesting. On June 30 of last year, which was the end of the season, stocks of raw silk in every country were smaller than ever before. The new crop in Canton showed a shortage of 55 per cent. Canton usually exports 20,000 bales to Europe and America. In Northern

China, which includes Shanghai, there was a deficiency of from 20 to 25 per cent. Italy showed a loss of from 15 to 20 per cent. At the end of October, 1885, the lowest price of the century ruled on all grades of silk. At that time a syndicate was formed in Italy which was composed of silk merchants and bankers, and the price was forced up about 25 per cent. In October of 1888 prices reached a lower basis than ever, and early in December of that year some leading houses in London, Lyons and China, who are heavy importers and exporters of raw silk, commenced to operate, and to this is partly due the recent advance.

The Persian Government has issued a decree prohibiting the construction of works with foreign capital, which does not tally with the spirit of recent utterances of the Persian Minister at Washington.

Fifteen thousand employees of the Panama Canal Company are liable to become destitute and desperate in case their resources are cut off for any reason, and, as many of them are almost savage Liberians, fears are entertained that hunger may drive them to pillage and destruction. According to the terms of agreement between the Government at Bogota and the canal company the entire plant, including railroad, shops, land and, in general, all property connected with the work of construction, are forfeited to the "concessionaires" without indemnity of any kind, in case the scheme is either abandoned or transferred to "any foreign government or nation."

The long-pending contest between the Dominion Government and the Province of Manitoba has ended in a decision by the Supreme Court, rendered unanimously, that the province has a right to authorize the construction of lines across the lines of the Canadian Pacific, the only condition being that the mode and place of crossing shall be approved by the Railway Committee of the Dominion's Privy Council. Manitoba henceforth will be untrammeled in reaching out across the boundary for closer commercial connections with the United States, with the special object of gaining an outlet for its stores of grain. The Canadian Pacific, on the other hand, is thwarted in a quarter where obstructions were least expected.

Several million dollars have been withdrawn from Connecticut savings banks during the year for investment in Western mortgage securities.

The wire rigging of the great five-masted schooner Governor Ames came down with a crash during a heavy blow, the ends of the wire having been cut too short in splicing, and all of the masts went overboard.

The Mexican Government is removing obstacles to the export trade of that country so far as possible in an effort to encourage the largest expansion.

Engineer Merracal, of the Nicaraugua Canal Company, says a newly discovered mountain route will cost $15,000,000 less than previous estimates, and discharged Panama Canal men can be had at 75 cents to $1 per diem.

The Cincinnati Tin and Japan Company, owing to the steady growth of their business, have been compelled to seek larger quarters, both for manufacturing and trade purposes. This object was accomplished in securing the premises 174 and 176 Main street, between Fourth and Fifth streets, consisting of two pressed brick buildings of five stories each, having a frontage on Main street of 40 feet, running back 160 feet to the alley, on the opposite side of which is an additional building 25 x 50 feet, three stories high, this latter will be used for manufacturing purposes exclusively. The basement of the main buildings will be used for the storage of Hollow-Ware, Refrigerators, Gasoline Stoves, &c., the first floor will contain a complete stock of Tin Plate and Sheet Iron, the offices will also be located on this floor; the second floor will be fitted up in an attractive manner as a sample-room, and where Stamped Ware will be kept. The third floor will be devoted entirely to Box Goods and Japanned Ware; the fourth floor, storage for Pieced Tinware, and the fifth floor will be used as a shop. On this floor and in the factory building already referred to, will be produced all the Japanned and Pieced Tinware, Sheet-Iron Goods and Solder, for which the firm enjoy an excellent trade. Broad stairways provide access to the various floors, which are in turn well lighted by means of extra large skylights. Two hydraulic elevators provide means of transportation of the heavier articles from floor to floor.

A Large Sand Wheel.

A dispatch from Scranton, Pa., under date of the 19th ult., says: "The largest wheel of the kind ever made in this country, and probably the largest of any kind, is now in course of construction at the machine shop of the Dickson Mfg. Company here. It is what is called a sand wheel, and is being made for the Calumet and Hecla Copper Company, of the Lake Superior region. The great wheel will be 53 feet in diameter and several feet wide, and the Dickson Mfg. Company will get $70,000 for it. It is being built around a 20-inch hollow shaft of gun-metal, and it will weigh between 150 and 160 tons when completed.

When the great wheel is put in place at the copper mines it will be made to revolve slowly by means of enormous cogs on the surface of its circumference. These cogs are being cast in segments, and will weigh many tons in the aggregate. On each side of the mammoth wheel there will be 50 buckets, each of which will hold about 100 gallons, and these buckets will elevate the washings and dump them into a sluiceway. After the great wheel has been built up and all the finishing touches have been put on, it will be taken apart and shipped.

The first of the calendars from the Metal trade to reach us this season is one from Bruce & Cook, 186 Water street, New York, and its simple and tasteful design will be pleasant to look back upon from the midst of the over-ornamented and gorgeous productions that will in all likelihood come to us for notice during the next few weeks. The calendar is similar to those issued in former years by this firm. It is a nearly square piece of heavy white cardboard, edged with a broad band of fine scroll-work in black and red. Across the top is the firm's name and business, printed in large, plain type, and the months are paneled off in columns down the sides. In the middle of the card is a wood-cut representing the front and rear elevations of the firm's warehouse on Water and Pearl streets, while above and below the illustration are lists of the metals and goods kept in stock. The cut is evidently new, and though a great improvement on the one formerly used, its execution is hardly in keeping with the other decorations of the calendar. Messrs. Bruce & Cook are among the oldest houses in the American Metal trade, the dates 1812 and 1889, which are given a prominent position on the card, indicating the length of time the firm has been in existence. Accompanying their calendar Messrs. Bruce & Cook send a New Year's greeting to the trade in the form of a circular letter. After referring to their extensive line of goods and the saving in shipping charges and freights to the purchaser who buys his goods in one lot, the circular presents the following review of the Metal markets during the past year: "The reaction from high prices of metals, to which we referred last year, came during the spring months, and since that time lower prices have ruled, except for Copper and for a short time in Pig Lead. The former still holds at a fictitious value owing to the operations of the syndicate, who have been successful, up to the present time, in maintaining a price not warranted by the ordinary conditions of supply and demand. The latter, by a vicious method of speculation, was forced during the early autumn above 5¢ ₱ lb, from which it dropped suddenly, owing to the inability of speculators to carry; and in its fall crushed the leaders in such unwarrantable operations, and is now ruling at a fair market rate.

Opalescent Glass.

C. Edward Henry, formerly of New Rochelle, N. Y., has just put in operation the Opalescent Glass Works, at Kokomo, Ind., for the manufacture of glass for decorative purposes. The location was chosen to take advantage of the natural gas found in that vicinity, which is furnished free to manufacturers. The works consist of a modest brick factory, containing a seven-pot furnace, a reheating furnace and annealing furnaces. The chief product of the works is drapery glass, now extensively used in this country for ornamenting windows. *Scribner's Monthly* for December contains an article on the uses to which this glass has been put, the writer claiming that our artists and decorators are now producing effects in stained glass windows far superior to the best work of European artists. He describes part of the process of manufacturing drapery glass as follows: "This is made from the glass as it is thrown in a melted state upon a flat table of iron to be rolled into a disk. When the glass is spread out, very much like pie crust, the roller by which it is spread keeping up the resemblance, the edges are seized by the glass maker, armed with short tongs, who overlaps an edge, or pulls and twists it in various directions as his fancy may suggest. This glass, when annealed and cooled, reveals in great variety the flow and twist of folds of drapery, and when the artist artisan, with the main direction of the lines of the draperies of the cartoon which he is following firmly fixed in his mind, visits the racks in which, row upon row, the disks of glass are stored, he is generally able to select pieces which, placed in the window, represent in the color of the glass, unaided by the painter's skill, the most subtle gradations of light and shade in the form of the drapery." The method in which the glass is colored is kept secret. The coloring matter used operates very singularly on the glass, being deep in some places, and fading in an irregular manner to the lightest tints. It is sometimes mottled and again very evenly disseminated. Some of the plates of glass have a very smooth surface, like window glass, while others are full of corrugations and waves. The plates as finished are about 2 feet square, and are sold by the pound. Mr. Henry's warehouse, adjoining the works, is a most fascinating place for a student of color. The plates are arranged in racks, classified by colors as nearly as possible, but hardly any two plates are precisely alike when held up to the light. The demand for this glass is large and constantly growing, the works in question having orders far beyond their capacity. Mr. Henry also manufactures glass insulators for incandescent electric lights. These are made in a press, in which molten glass is forced into the desired shape by suitable dies and molds.

MANUFACTURING

Iron and Steel.

The puddling department of the Norton Iron Works, at Ashland, Ky., that has been idle for the past two years, was started on December 17 on a contract for muck bar that will make steady work until March 1. The blast furnace is turning out its usual quantity of American Scotch pig iron, and the nail factory is in operation.

Cherokee Furnace, at Cedartown, Ga., out of blast for relining and repairs since July last, will resume operations early in the spring.

The Waugh Steel Works, of Belleville, Ill., are manufacturing steel rails, billets, slabs and nails. The company have also recently commenced the manufacture of steel shafting of all the different sizes, besides squares and flats. They have been running very successfully on soft steel, for which they find a ready sale. The company also manufacture all sizes of steel rails from 12 pounds to 35 pounds. They are constantly making additions to their works as fast as the demands of the trade require.

The United States Iron and Tin Plate Company, Limited, of Demmler Station, Pa., are contemplating the completion of a small new addition to their works. The building was commenced about a year ago, but was not finished on account of the uncertainty of the Tariff laws.

On Monday, the 24th ult., the Pottstown Iron Company, of Pottstown, Pa., closed down the nail department of their plant, and paid off and discharged all the employees. The average time made during the past month has been about ten days. The company complained that they were not making any money in nails, and about three weeks ago suggested that the men should agree to a reduction of wages for themselves. No action was taken by the men; hence the action of the company. It is thought the company will now fix a lower rate of wages, and resume with men who may accept it.

Macungie, Pa., Furnace, which has been undergoing repairs since July 1, is about completed, but will remain idle subject to a more favorable market.

A press dispatch from Steubenville, Ohio, under date of the 26th ult., says: "James F. Daton, receiver of the old Mingo Iron Works, which failed in 1879 with a large indebtedness, to-day declared the second dividend to the creditors. There were claims amounting to $286,000 presented to the receiver, the heaviest one being by Singer, Nimick & Co., of Pittsburgh. Upon this amount the receiver has declared a dividend of $1\frac{46}{100}$ per cent. This is all the creditors will ever receive, as the settlement of to-day is final. The receiver has been discharged."

The blast furnace of Isaac McHose & Son, at Norristown, Pa., chilled on Monday, the 24th ult., and was blown out. It will be repaired and relined and put in operation again as soon as possible

After an idleness of six months, during which complete repairs were made, Marshall Furnace, at Newport, Pa., will begin work on the 10th inst.

On Wednesday, the 26th ult., the Altoona Iron Company, of Altoona, Pa., declared its usual annual dividend of 10 per cent. on their capital stock of $100,000.

From the Vermillion *Iron Tribune* of a recent issue we take the following: "A new iron company has been formed, to be known as the Vermillion and Grand Marais, with headquarters at Duluth. Their capital stock is $5,000,000. The incorporators are Hiram W. Sibley, New York; Henry M. Loud, Oscoda, Mich.; David S. Fox and Charles S. Brown, Flint, Mich.; Isaac Bearinger, East Saginaw, Mich.; George L. Walker, Detroit, Mich.; James Charnley, Chicago; Moses Stewart, Jr., Verndale, Minn.; William McKinley, Frederick W. Paine, Horace Williston and George T. Hughes, Duluth. The company own lands on the East Vermillion and also the Messaba. The company have in their possession between 12,000 and 15,000 acres of land, much of it first selections and containing many rich and very valuable iron outcroppings. It is scattered over the entire range. Officers and directors have been selected as follows: Henry M. Loud, president; M. Stewart and Wm. McKinley, vice-presidents; F. W. Paine, treasurer, and Horace Williston, secretary."

J. M. Coleman, of Niles, Ohio, has closed a contract with the Cherokee Land and Iron Company for the erection of a large and entirely modern rolling mill at New Birmingham, Ala. It is expected that a portion of the machinery will be on the ground within 30 days, and that the mill will be in full operation by next spring.

No. 1 of the Maryland furnaces, at Baltimore, having a monthly capacity of 600 tons, will go in blast about the middle of February, simultaneously with the blowing out of No. 2 for a new hearth.

We are authoritatively informed that the report that the plant of the National Tube Works Company, at McKeesport, Pa., would be closed down in the near future for an indefinite period is without foundation.

M. V. Smith, metallurgical engineer, of Pittsburgh, is constructing several new rolling mills in different parts of the country, including the mill for the Minnesota Car Company, at Duluth, Minn.; the mill for the Standard Spike Company, at Manchester, Va., and the mill for the Union Steel and Iron Company, at St. Joseph, Mo.

A change will shortly be made in the firm known as the Katahdin Charcoal Iron Company, at Katahdin, Me. Fred. W. Hill and Charles D. Sanford have bonded the controlling interest in the Katahdin Charcoal Iron Company, and will soon complete the purchase and assume the full management of the works and run them to the extent of their capacity. They will secure a lease of the Piscataquis Iron Company, which owns the plant and the township, to continue 50 years. The capacity of the work is about 25 or 30 tons per day, and the iron, as is well known, is of the very best quality. It is largely coming into use for car wheels, and the fact that the Canadian Pacific railway is to pass near the works, and that it is intimated that they will establish a foundry there for making car wheels may give the works one of the greatest possible booms in the near future.

The Millerton charcoal furnace, at Irondale, N. Y., blew out on Thanksgiving day, its resumption depending on future developments in the iron trade. In the meantime a new hearth will be put in and general repairs made.

From a recent issue of the *Age of Steel*, St. Louis, we take the following: "The St. Louis Ore and Steel Company are preparing to start their blast furnaces, and may finally follow with the steel works, though that depends upon circumstances. The company have over 100,000 tons of ore at their Pilot Knob Mine, and the idea is to turn this into iron. The ore is not sufficiently high grade to make the marketing of the resulting iron profitable at a distance, for instance, in Pittsburgh, and it is therefore very probable that the steel plant will be reopened should the rail market improve. In that event the Jupiter blast furnace, though controlled by another corporation, would likely go into blast also, as its output would be needed to supplement that of the stacks at the steel works. "C" furnace at the latter place is expected to blow in early next week, and a second stack shortly thereafter."

On Friday the 21st ult. work was commenced on the erection of a large wire rod mill, at New Castle, Pa. The capital stock of the new company is $150,000, all of which it is stated has been passed in. The proposed buildings will cover 4 acres of ground just east of the Crawford furnace, and will turn out about 150 tons of rods per day. President William Patterson, of the National Bank of Lawrence County, and other capitalists of New Castle and Pittsburgh are interested in the new concern.

Machinery.

H. K. Porter & Co., Limited, of Pittsburgh, manufacturers of light locomotives, are making an engine for display at the Paris International Exhibition, which opens May 5, 1889. The locomotive is especially designed for use on the coffee and sugar plantations of South America and the East Indies. On the 1st ult. this firm shipped to the Argentine Confederation, South America, six locomotives to be used on rural railroads near Buenos Ayres. The contract was received after close competition from English locomotive works.

The Crescent Foundry Company, Limited, have been organized at Pittsburgh, with a capital stock of $5000. The company is composed of Louis Weitheimer, Jacob J. Kish, William C. Kish and Louis M. Kish.

The National Wrapping Machine Company, of Pittsburgh, have contracted with Bair & Gazzam, Limited, of that city, for the construction of ten soap-wrapping machines.

The Emerson Mfg. Company, of Lawrence, Mass., are to erect a new shop 150 x 40 feet and one story high for the manufacture of paper-making machinery.

The Youngstown Brass Works, John W. Morrison, proprietor, have recently been established at Youngstown, Ohio, for the manufacture of brass and bronze castings, tuyeres &c. They report that they are already receiving a liberal share of the trade.

Bids were opened at the Navy Department on the 27th ult. for machine tools for the Mare Island, Cal., Navy Yard, under an appropriation of $100,000 for the purpose of fitting the yard for the repair of steel ships. There were 49 items, the principal one being a set of bending rolls, for which the Niles Tool Works made the lowest bid, $40,290.

The James E. Thomas Company, founders, of Newark, Ohio, cast recently the fourth of a number of large band-wheels they are making for Corliss engines. Its dimensions were: Diameter, 16 feet; bore, 10 inches; rim, 36 x $4\frac{1}{2}$ inches. Its weight was 29,400 pounds. It was cast in one piece, and afterward cut in two for shipment, being provided with lugs for bolting together again.

B. F. Sturtevant has removed from his old salesroom, at 115 Purchase street, to much larger and convenient rooms at 34 Oliver street, corner of Franklin street, Boston.

The Collins-Gibbons Mfg. Company, of St. Louis, purpose at an early date to put in the necessary machinery and increase their force sufficiently to make four sizes of their automatic wire straighteners and cutters.

Hardware.

The Painesville Metallic Blind Company, Painesville, Ohio, O. G. Tuttle and C. C. Finneran, proprietors, recently moved into their new building at the corner of Elm and Railroad streets. This building is two stories high, 60 x 26 feet, with an L 16 feet square, which gives it a frontage of 42 feet on the railroad. Last March this firm bought out the business interest of Wilson & Reed in the manufacture of metallic binding, and have since then been constantly increasing their trade.

I. A. Weston & Co., Syracuse, N. Y., whose works were nearly destroyed by fire December 4, are rebuilding at Jamesville, N. Y., seven miles south of Syracuse, where they will have largely increased facilities. They refer to their business in their patent steel wheels as having developed into large proportions, many of the leading manufacturers of tricycles, velocipedes, hand carts, garden plows, wheelbarrows, &c., having adopted their wheels.

The Rock Island Knife and Shear Co. have removed their plant to Kokomo, Ind., to take advantage of the natural gas. Their facilities in their new location have been largely increased.

Ford & Co., late of Cory, Pa., have just commenced the foundry business at Kokomo, Ind., and report orders ahead.

The shipping, polishing and machine departments of the works of E. T. Fraim, Lancaster, Pa., were damaged by fire on the evening of the 24 ult. Mr. Fraim, however, announces that in two weeks he will be again in full operation.

The Rockford Bit Works, formerly at Rockford, Ill., are now in full operation at Kokomo, Ind. They employ about 40 hands.

It is reported that Wilkins Linhart has been appointed receiver of the property and effects of the Hollis Tack and Nail Company, Limited, at Pittsburgh.

Local barb wire manufacturers are exceedingly well supplied with orders, the season considered. The Freeman Wire Company reported a week ago that they were 400 tons behind demand, and the American Company at that time were 300 tons behind, after having depleted, to the point of exhaustion, all stocks in their warehouse. The Continental Wire Company cleaned out their stock some weeks ago. The Southern Wire Company restarted this week with a full force of hands. The last named had received from and disposed of a considerable surplus of wire made at Braddock, near Pittsburgh; until this was sold their local works were run only in a light and irregular way. Prices, however, have ruled extremely low all through the year, and are a prolific source of complaint among manufacturers. —*Age of Steel, St. Louis.*

Miscellaneous.

The wire nail factory of the Hartman Steel Company, at Beaver Falls, Pa., which has been idle for several months, has resumed operations, on double turn.

P. J. & C. A. D. Lynch have just commenced the manufacture of steam boilers at Kokomo, Ind. Their shops, which are substantially built, are 60 x 120 feet, with cupola of 75 feet. They will be known as the Kokomo Steam Boiler Works.

Michigan Stove Co., Detroit, Mich., have decided to still further improve the appearance of their works by the addition of an ornamental iron railing to go around the top of their mammoth buildings, and have contracted with E. T. Barnum, Detroit, for the work.

A circular has been issued announcing that owing to a large extension of manufacture the Avery Elevator Bucket Company, of Cleveland, Ohio, have considered it advisable to change their name to the Avery Stamping Company. They will continue to make seamless steel elevator buckets a prominent feature of their business.

The Williamson Trade School.

The keynote of Mr. I. V. Williamson's deed of trust, by which he provides for the organization and support of the Williamson Free School of Mechanical Trades, is sounded in the clause: "I especially direct that each scholar shall be taught to speak the truth at all times, and I particularly direct and charge as an imperative duty upon the trustees that each and every scholar shall be thoroughly trained to habits of frugality, economy and industry, as above all others the one great lesson which I desire to have impressed upon every scholar and inmate of the school is that in this country every able-bodied healthy young man, who has learned a good mechanical trade and is truthful, honest, frugal, temperate and industrious, is certain to succeed in life and to become a useful and respected member of society."

That expresses the essential purpose of Mr. Williamson's great gift, which he tells us in the deed of trust he has contemplated for 30 years, and for which he has saved and accumulated the means during that long period. The Philadelphia *Ledger* sketches briefly the character of the Williamson Free School of Mechanical Trades for which provision has thus been made. The trustees, John Baird, James C. Brooks, Lemuel Coffin, Edward Longstreth, William C. Ludwig, Henry C. Townsend and John Wanamaker, are given full control of the details of organization and administration, subject only to the general provisions herein sketched. To found and support the school stocks have been set aside of the par value of $1,500,000, estimated to be worth in the market about $2,250,000. Of this amount one-fifth, or about $450,000, will be available as a building fund for the purchase of land, erection of buildings and the furnishing thereof. This would leave for an endowment fund about $1,800,000, the income of which is available for the expenses, support, maintenance, renewals and repairs of the school, its furniture, plant and equipment. A rough calculation, based on the cost of similar schools, shows that, without accretions to the fund now provided, this gift may be made to extend the benefits of free mechanical education and support to not less than 300 pupils, and perhaps to double that number.

The buildings are to be substantial structures of stone or brick, expensive materials and elaborate ornamentation being avoided, and they are to be erected on grounds in the suburbs of Philadelphia or in Bucks, Delaware or Montgomery county, not exceeding 300 acres in extent, but additional ground may be bought, after the school has been organized, provided the aggregate holding (exclusive of ground given, conveyed or devised) shall not exceed 500 acres, nor the average of cost $400 per acre.

The institution is to to be an absolutely free home and school for healthy young male persons of ages between 12 and 18 years, who must be bound as indentured apprentices to the trustees for such periods as the latter may determine, provided it shall not be for less than three years nor extend beyond the minority of the scholar. Preference is to be given to the poor. Other preferences (in the order named) are to those born in Philadelphia, in Bucks, Montgomery and Delaware counties, in other parts of Pennsylvania, New Jersey, in other parts of the United States.

The pupils are to be fed, clothed and lodged during the term of their apprenticeship; those who require it are to be given a good common school English education, and each is to be taught such mechanical trade as he may be fitted for; they may also be instructed in the art of farming or gardening or either. The pupils are to have moral and religious training, but no attempt is to be made at proselytism nor is favoritism to be shown to any particular sect or trade. Their physical training is also to be attended to, so that each one may grow up with a sound mind in a sound body. The trustees are given full authority to expel pupils who are intractable or insubordinate, or guilty of vice or crime, or to cancel the indentures of any scholar for any reason which they deem good and sufficient; and, finally, the trustees are authorized to give deserving pupils, when they leave the school at the end of their term of indenture, a sum of money not exceeding $50 to any one scholar.

It will be seen from the above sketch of the nature of the school to be established that it will resemble Girard College in that it provides for the support as well as the education of its pupils, and that it will differ from the college in that it will be open to boys with parents as well as to orphans and half orphans, and more especially differs from Girard College in that all pupils must be taught a mechanical trade. The last mentioned is an essential difference, for though in recent years Girard College has introduced mechanical training, in obedience to Girard's direction to have the pupils taught "facts and things, rather than words or signs," yet trades are not taught, and, indeed, the plan of the school, as sketched by Girard, required that the pupils shall simply be prepared to learn a trade or business, and be bound out for that purpose. Mr. Williamson's scheme is based upon the advanced thought of the day that some trades may be effectively taught in a school in less time and more advantageously than they can be picked up by learners in a shop. That such an institution, supplementing the work of Girard College by taking deserving pupils excluded therefrom, may be made of great value to the community is evident, and Mr. Williamson has selected a Board of Trustees clearly alive to the purposes he has in view and fully capable of carrying them out with honor to themselves and to the founder of this great charity.

Pensacola, Fla., is building a marine railway on a novel plan, under the direction of French engineer. To secure permanency the columns supporting the ways will be made of wrought iron. The base of each column is to be provided or armed with a flange 16 inches in diameter. The superstructure will be made of four strings of double standard steel rails of 76 pounds to the yard, strongly bolted, riveted, cross-tied and braced together. The length under water will be 285 feet. The part above the water, and resting on a yellow pine trestle-work, is to be 250 feet long. The cradle or ship carriage is to be 225 feet long, and will be provided with cast-iron rollers, the bearings of which will be bolted to the lower part of the cradle. The motive-power will consist of a 40 horse-power Ide automatic cut-off steam engine, making 275 revolutions per minute. The gearing will be that of a worm and worm-wheel, driving a powerful wrecking capstan.

The Pratt Institute opens the first term of the year with about 1000 pupils. All the appointments of the buildings, the tools and implements of the shops and foundry, and the fittings of the different departments are of the best and creditable to the city.

The Iron Age

New York, Thursday, January 3, 1889.

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RICHARD R. WILLIAMS, - - HARDWARE EDITOR.
JOHN S. KING, - - - - BUSINESS MANAGER.

The Rail Trade in 1888.

The most prominent feature in the history of the iron trade during the past year has been the unsatisfactory condition of its greatest single industry, the manufacture of steel rails. Exceptionally prosperous in 1887, the rail makers have been notable sufferers from a decline in 1888. While the producers of other merchantable articles in the iron industry are dependent more upon the influences which shape the general prosperity of the country, the rail manufacturers are affected directly by railroad building and renewal. General consumption of iron and steel has been admittedly enormous during the past year, and has been reflected in a heavy volume of business done on a low level of prices. Railroad consumption has probably been below the normal quantity, considering the large mileage of the country.

The following table, showing the sales of steel rails, as compiled from month to month from the reports of the members of the association to its Board of Control, best reflects the wide differences there have been between the two years. On the 1st of February, 1887, there had been sold more steel rails for delivery in that year than had been entered for 1888 delivery on the 1st of December, 1888. All through 1887 it was the buyer who was endeavoring to place his orders. In 1888 there was an increasingly sharp struggle among the mills to secure work enough to keep going steadily.

Sales of Steel Rails, Gross Tons.

	1887.	1888.
To January 1	1,032,850	253,687
February 1	1,303,140	395,000
March 1	1,442,891	565,629
April 1	1,494,384	658,513
May 1	1,598,048	721,000
June 1	1,614,545	820,180
July 1	1,695,055	934,987
August 1	1,770,449	986,009
September 1	1,816,444	1,060,000
October 1	1,833,126	1,113,883
November 1	1,861,998	1,250,740
December 1	1,898,444	1,251,177

We may state in this connection that the reports of sales do not exactly record the time of the transaction, because in many cases business practically concluded but not formally settled by the signature of contracts is not reported until later. Still, the following table may prove of some interest as showing by monthly sales how the activity in the market fluctuated:

Monthly Sales of Rails, gross tons.

Months.	1887	1888	1889
Previous to January 1st	1,032,850	253,689	Delivery to December 1.
January	270,290	141,313	
February	130,751	170,629	.....
March	52,493	92,884	.....
April	103,664	62,487	.....
May	16,497	99,180	.....
June	80,510	114,807	.....
July	75,394	51,022	.....
August	45,995	75,691	.....
September	16,682	53,887	40,000
October	28,872	146,857	76,180
November	36,446	437	154,491
Total	1,898,444	1,251,177	270,671

The January report is, of course, not yet at hand, but from even a superficial knowledge of the business reported it may be stated that the sales for 1889 delivery to date are in advance of the aggregate of transactions closed for 1888 delivery at a corresponding period last year. This may or may not indicate heavier buying this year. On the whole, we are inclined to believe that it does. Thus far the bulk of the business done has been for renewals on old roads, and comparatively little for new construction. It is natural that for the former purpose the demand may be largely increased, because the cost of renewal is unprecedently low, owing to the fact that old iron rails are fetching within a few dollars a ton as much as new steel.

From a manufacturing point of view the following table showing the shipments of rails from the mills for each month for the years 1887 and 1888 is of considerable interest. In connection with it, as well as the other tables, it should be stated that the figures cover only heavy rails, light sections not being included in the reports:

Shipments of Steel Rails, Gross Tons.

	1887.	1888.
To February 1	104,226	29,861
March 1	235,160	98,361
April 1	389,532	184,580
May 1	564,403	299,556
June 1	747,181	448,149
July 1	907,351	585,558
August 1	1,045,048	710,502
September 1	1,219,717	824,000
October 1	1,290,825	921,363
November 1	1,569,033	1,029,179
December 1	1,729,108	1,116,788
January 1	1,833,649	.....

Official reports for the production of steel rails by all the mills, and of all weights, showed the total to have been 2,101,904 gross tons, or 268,255 tons more than the association shipments. For the first six months of 1888 Swank's production statistics gave a total of 692,197 gross tons, or 106,639 more than the shipments in the above table. This would indicate a total output of 1888 of between 1,350,000 and 1,400,000 gross tons. The capacity of the country is now between 2,400,000 and 2,500,000 gross tons, including the new mill.

So far as the outlook for the current year is concerned, there is nothing definite. It must depend very largely upon the railroad situation. The Eastern and Middle States and the Northwest are not expected to furnish much business as the result of new mileage. The principal demand is likely to come from the South, certain parts of the Southwest and the Pacific Slope. It would be idle to look forward to heavy buying because of low prices of rails. While it has its influence, experience has taught that railroad managers and speculators are not deterred from buying rails when they are high. The all-absorbing question with them is whether or not they can place bonds and market securities. Nor do low prices of rails notably stimulate construction, though they may influence renewal considerably.

A subject which has been attracting attention lately is the large capital of some of the Southern iron enterprises, be it in the form of stock or of bonds or both. In some cases heavy interest payments have caused anxiety to sell and have had some influence on the markets. We are far from considering this a subject for reproach, but the ownership of extensive tracts of mineral lands has a natural tendency to lead to the building of additional furnaces. A few figures will illustrate this. Take, for instance, the case of a company whose property is represented stock and bonds to the extent of $3,500,000, on which 6 per cent. dividends or interest must be earned. The company have mineral lands sufficiently developed to furnish the raw material for four modern furnaces, producing annually 150,000 tons of pig iron. This means the mining and coking of at least 300,000 tons of coal and, say, 375,000 tons of ore. Placing royalty, or its equivalent, allowance for exhaustion of lands at 5 cents a ton for coal and 10 cents a ton for ore—certainly modest figures—this would call for $52,500 annually for a sinking fund. Add to it 6 per cent. on capital, including working capital, or $210,000, reaching a total of $262,500, equal to $1.75 per ton on 150,000 tons of pig iron produced. How many Southern furnacemen make allowances for such fixed charges in their cost sheets?

The Duty on Lead in Silver Ore.

During the recent debate in the Senate on the Tariff bill a subject came up which has been widely discussed during the past year without apparently being well understood. Since our railroads penetrated into Mexico, and afforded transportation facilities to numerous mining districts, considerable quantities of Mexican ore have been shipped to American reduction works. The bulk of this ore has been entered as silver ore, in order to take advantage of a ruling of the Treasury Department some years since. The general practice has been that if an article contained or was composed of two or more substances the duty is dependent upon the rate of the component of greatest value. Silver ore is free; hence, under the ruling, ore carrying so much silver that the value of the precious metal is greater than that of any base metals it may contain comes in free. To illustrate: An ore carrying only 20 ounces of silver valued at, say, 90 cents an ounce, or $18, could contain not less than 25 per cent. of lead, which, at 3½ cents, would be equal to $17.50, and yet it would be pronounced a silver ore by the customs authorities.

The Senate Substitute bill contained the following item: "Lead ore and lead dross, 1½ cents per hundred, provided that lead ore containing silver ore, or silver ore containing lead, shall pay a duty of 1½ cents per pound."

The object of this proposed modification of the present law is to stop the evasion of a duty of 1½ cents a pound on every pound of lead contained in the alleged silver ore. This has become a matter of great magnitude. The only and latest official data we have on the subject are those given in the article on lead in the "Mineral Resources," published by the United States Geological Survey. It appears that during the fiscal year ending June 30, 1887, the lead contents of the silver ores imported amounted to 15,488 net tons of lead, valued apparently at 1 cent a pound. As the production of the metal was 160,700 tons in 1887, it is clear that not less than 10 per cent. of the whole product was derived from Mexican silver ore. Since then the quantity has very largely increased.

The smelters on the border pay 90 per cent. of the New York price for the silver and deduct about $10 for smelting charges. They pay 1.75 cents per pound for the lead in the ore. The cost of smelting is probably not quite $10, and the rate paid for the silver covers the loss in smelting, the allowance for loss in desilverizing and the express charges on the metal to market. The difference between the price paid for the lead at the smelter and the market price of 3.75 cents must cover the cost of desilverizing, the allowance for waste in that process, about 5 per cent., and the freights. It is clear that what advantage there is in the business accrues to the Mexican mine owners, because they receive the same rate of payment as the American ore producers. Practically, the amounts saved by evading the lead duty, through the importation of "silver ore," is made a gift to them. In other words, the mining districts of Northern Mexico are being stimulated at the expense of our own mines in the Rocky Mountains and in the Mississippi Valley.

Until the last few years only a very small quantity of lead has been produced in Mexico for shipment abroad, the bulk of what was made going to England as argentiferous base bullion. In some important districts the silver lead is simply cupelled, the baser metal being used only as a carrier in smelting. The country has not, generally speaking, the proper fuel at a sufficiently low price to become lead smelters of any consequence.

It is urged, in opposition to the demand for a suppression of the free lead imports in Mexican "silver ore," that it would ruin the two smelting works built during the past three years at El Paso, and that it would hurt a considerable number of other metallurgical establishments. So far as the El Paso works are concerned, they were built with the clear knowledge that, in reality, the whole lead imports were an evasion of the duty under the cover of a treasury ruling.

Independent Steam Engines.

It has for many years been the practice of manufacturers to consolidate their power as much as possible. Engine builders have been called upon to construct larger and larger engines, as much to meet the demand for a central source of power for the machinery of a large factory as for the requirements of very heavy special work which smaller engines were unable to perform. In this consolidation of power a large engine is located at a place adjacent to the boiler-room, and the power is thence transmitted or distributed by belts, shafts, pulleys, &c. Oftentimes power is thus transmitted over almost literally miles of shafting. It is carried from room to room, story to story, over or under alleys, and to out-of-the-way places requiring considerable engineering skill to apply the power where it is desired or to give the proper motion to the machinery. An inevitable waste of power occurs in operating any kind of machinery, but in the endeavor to run a whole factory of large size with a single engine fully as much power may be lost by friction or expended in driving heavy belts and long shafts as is utilized in the process of manufacturing.

From a mechanical engineer's standpoint the recent practice of a growing class of manufacturers is in some respects eminently superior to the system of consolidating power. A number of small engines are employed, being located in the various departments of the works where the power is to be used. Steam is conducted from the boilers, which are centrally placed, by well-protected pipes to the several engines. The loss by condensation in thus conveying steam any reasonable distance is not great, and the engine for each room or shop is set up in the most convenient place. The installation of such a power plant will not necessarily be more expensive than a large engine with its costly belting and shafting, but, on the contrary, it may for obvious reasons be less expensive, as with separate engines in each department the power needed can be more accurately gauged, thus avoiding the providing of a surplusage of power in the large engine which adds to its cost. Under special and frequently recurring circumstances there is a constant balance in favor of the independent engines from the time they start, as compared with the large central engine.

Aside from the question of economy there are other advantages brought forward by the advocates of independent power. The breaking down of an engine, a main shaft or a belt does not in this case stop the entire machinery of the works, but, on the contrary, each department, being independent of the others, can be operated without regard to breakdowns happening elsewhere. Even in cases where it might seem desirable, for some reasons, to locate the power in one place, this matter of breakdowns and consequent confusion throughout the entire establishment would seem to make the use of several small engines preferable. In the event of any one department working overtime, the entire steam plant and the entire shafting are not brought into use, but only the one engine necessary for that department, requiring less steam and consequently less fuel. Again, in establishments where more power is required at times than is usually the case, owing to the nature of the work in hand, the small engines are preferable, as an extra engine representing reserve power can be provided, but need not be run except just when heavy work is to be done. This is especially applicable to electric-light plants, in which by using the smaller engines the power required can be more readily adjusted to the needs of long and short time customers, city or commercial lights, domestic or manufacturing purposes, &c.

The increasing use of gas or oil for fuel assists the introduction of independent engines, since with such fuel the supply of steam is also made independent. The advantage of this in light manufacturing, or in departments in which power is used irregularly, or at times necessarily at variance with the usage of other departments, will readily be appreciated. The general convenience of oil firing, moreover, is another point worth considering. The development of the demand for engines to furnish independent power is causing quite a number of engine builders to pay special attention to this class of work. Their efforts are being directed to the construction of engines which will require a very small amount of care and attendance, and in this they are succeeding most admirably.

Mexico in 1888.

On December 1 last President Porfirio Diaz was inaugurated for a second term of four years. During his presidency Mexico has not only enjoyed the blessings of undisturbed peace, but had progressed rapidly in every respect. Spread over an area of 1,946,292 sq. km. the present population of the country is 11,000,000, 19 per cent. being whites, 38 per cent. Indians, and 43 per cent. mixed races. The population of leading cities is at present as follows: Mexico, 350,000; Puebla, 112,000; Guadalajara, 95,000; Leon, 60,000; Guanajuato, 52,000; Mérida, 40,000; San Louis Potosí, 35,000; Zacatecas, 30,000; Querétaro, 30,000; Oajaca, 28,000; Colima, 26,251; Saltillo, 26,000; Morelia, 25,000; Aguascalientes, 22,000; Vera Cruz, 21,000; Orizaba, 20,500; Pachuca, 20,200, and Durango, 20,000.

The foreign debt of Mexico amounts to $28,300,000, and the home debt to $100,000,000. The budget estimate of the Federal Government for 1888–89 fixes the income at $37,900,000, and the outlay at $38,537,239. The army has been kept in a good state of efficiency; it is 30,017 strong, commanded by 1950 officers. The navy consists of five gunboats. About 7500 km. of railway are in running order, and there are in operation 41,507 km. of telegraph, of which 21,453 are the property of the Federal Government, 6887 of States, 6143 of railroads, 4098 of private telegraph companies and 2926 Mexican cable. The Government has 339 offices in operation. There are 300 chief post offices and 724 minor ones, employing 1528 persons, the receipts being $749,967 in 1887 and the expenses $857,424. The post office dispatched last year 22,885,092 letters and postal cards through the home mails and 1,345,720 international letters. There entered Mexican ports in 1886–87 were 1240 seagoing vessels of a joint tonnage of 1,032,725, of which 653 were steamers, measuring 877,518 tons. The merchant marine of Mexico numbers 421 seagoing vessels and 847 coasting craft.

Mexican trade has fluctuated of late years as follows, reduced to thousands of dollars.

Fiscal.	—Import.—	—Export.—		
year.	Merch'dise.	Merchandise.	Silver.	Total.
1883–84..	$34,025	$13,252	$33,473	$46,725
1884–85..	35,839	14,515	32,157	46,672
1885–86..	38,715	13,741	29,906	43,647

Export in 1886–87.

	Merchandise.	Silver.	Total.
To the United States..	$11,007	$16,576	$27,583
To England.....	2,397	11,122	13,519
To France..... ...	717	4,401	5,118
To Germany.....	891	1,290	2,181
To Spain.....	499	104	603
To other countries....	125	68	193
Totals.....	$15,636	$33,561	$49,197

The distribution of products exported was as follows:

Sisal hemp.....	$3,901	Istle fiber	$349
Coffee.....	2,627	Cattle..... .	471
Hides and skins	2,211	Silver lead.....	323
Cabinet and dyewoods....	1,849	Other goods....	2,360
Tobacco.....	851	Silver.....	33,561
Vanilla.....	694	Total.....	$49,197

The export of merchandise alone from January 1 to June 30, 1888, was $10,169,485, showing an increase over the corresponding six months of 1887 of $1,146,192 or 11 per cent., the United States receiv-

ing thereof 63 per cent., England 21 per cent., France 9, and Germany 5 per cent.

The American trade, merchandise only, exhibits the following figures:

Fiscal year.	Imports into the United States.	Domestic export to Mexico.
1888..... ...	$17,329,889	$9,242,188
1887.....	14,719,840	7,267,129
Increase.....	$2,610,049	$1,975,059

The parcel-post convention in a small way also stimulates commerce between Mexico and this country; out of the exchange of sample shipments by mail larger transactions frequently grow; everything, indeed, tends to increase our commercial intercourse with the neighboring republic since the railroad systems of the two countries are linked together, and that of Mexico uninterruptedly expands in all directions. The frequent mutual visits of merchants and others also contribute their share toward continually multiplying commercial and other relations, and in a couple of years Mexico will no doubt become the most important Spanish-American country we deal with, whether there be a reciprocity treaty or no.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., January 1, 1889.

Senator Allison and his colleagues of the sub-committee on their tariff substitute have lost no time during the holiday recess. They have held sessions daily, perfecting their bill by incorporating certain important amendments, so that every possible expedition might be thrown into the consideration of the measure in the Senate. There remain practically not more than 17 days till the 21st, the date fixed by common consent for taking a vote. Senator Allison says it will take every moment of that time to get the bill in a state of sufficient advancement to make the connection. To run over that date would reopen the whole subject unless the minority would agree to a few days extension if necessary. The Senator says that he will ask night sessions after a few days if that may seem necessary to the finishing up of the parliamentary part of the work in time.

The most important amendments which the sub-committee have been considering are the raising of the duty on tin plate from 1 to 2½ cents a pound, the classification of cotton ties as hoop iron and more clearly defining wire rods and wire for purposes of assessing duties. It is not improbable that Senator Brown, of Georgia, and possibly McPherson, of New Jersey, will vote for the Senate substitute. In the Republican ranks there is some opposition to sugar, especially on the part of Stanford, Ingalls, Plumb, Farwell and Cullom. Senator Allison, however, does not think that they will vote against the bill. In the House the fate of the Senate substitute for the Mills bill will be interesting. The chairman of Ways and Means and his party colleagues have been compiling data with a view to presenting a comparative exhibit of the operations of the two bills, Mr. Mills claiming that his bill is not practically hostile to American dustries. The protection Democrats have been conferring as to their course. It is not improbable with the tobacco interests that the Senate bill will pass the House if brought to a vote. The Ways and Means party, however, with the co-operation of the Speaker, will not permit a vote until they shall have made a very careful canvass and satisfied themselves that they have the strength to defeat the Senate substitute.

THE STEEL CRUISERS.

The two steel cruisers contracted for on the Pacific are rapidly approaching completion. The Charleston will be ready for her sea trial about the middle of February, and the San Francisco will follow soon after. Mr. Scott, president of the Union Iron Works, of San Francisco, has been here and gives a very satisfactory account of the experience of his company in the construction of the two cruisers He expects that this will be followed by the construction of the war vessels designed for the Pacific service. The steel plates for the vessels were contracted for in Pittsburgh. Mr. Scott says that the building of the two cruisers has given metallurgical industries, and particularly in steel, a great impetus, which he thinks will be permanent. To date about three-fourths of the steel used in the construction of 12 cruisers and armored cruisers for the United States on both coasts have been manufactured at Pittsburgh. The only exception, in fact, were the shapes turned out by the Phœnix Iron Company, at Phœnixville, and castings by the Standard Company, at Thurlow. The Pittsburgh establishments which have furnished this vast amount of steel for Government purposes are the Union Mills and Homestead Works of Carnegie, Phipps & Co., The Linden Steel Company, Oliver Bros. & Co., Park Brothers, Moorehead-McLean, and the Spang Company. The reports from the Bethlehem Company indicate that the plant for Government work is rapidly nearing completion.

CUSTOMS DECISIONS.

The following interpretation of the metal schedule in the statutes has been announced:

Certain automatic machines containing metallic clockwork, and which are used for the sale and distribution of chocolate, are dutiable as manufactures in part of metal.

Hooks and eyes coated with Japan varnish, and tinned and coated with lacquer, are not commercially known as japanned ware or as plated or gilt articles, and are dutiable as manufactures of metal.

Certain Odd Fellows' shields, 18 x 19 inches in dimensions, with various devices and lettering worked thereon in plush and metal, the groundwork being of the same materials, are held to be dutiable as manufactures in part of metal, and not as galloons, laces, &c., of gold, silver or other metal.

Certain steel clasps, with small steel chains attached for ornamentation, used in the manufacture of purses, are dutiable as manufactures of steel.

Reports as to the condition of winter wheat and the progress of seeding in California indicate better prospects than before at this season for the last three years. Reports from Washington Territory are of the same nature. Plowing and seeding has progressed uninterruptedly, and the area in wheat will be considerably increased over last season.

Boston is greatly exercised by an order from Secretary Endicott directing changes in the Charles River and Warren bridges to accommodate navigation, making necessary the expenditure of about $2,500,000 to make the improvement. Congress assumed jurisdiction in this matter through the operation of the River and Harbor bill, regardless of harbor commissioners or other State authorities. It is claimed that in the interest of justice the question whether the existing structures are obstacles, and what extent of change is really needed, if any, for the convenience of navigation should be first fairly considered and determined by some adequate authority, giving the defendant city or corporation an opportunity to be heard.

THE METALS IN 1888.

Copper.

As from the very commencement of the year the French syndicate represented by M. Secrétan and the "Société des Métaux," of Paris, took the necessary steps to get control of the output of most of the leading Copper mines of the world, and succeeded in doing so for a number of years to come, the history of the Copper trade in 1888 on both sides of the Atlantic has been almost altogether that of the syndicate. Through the foresight and good management which marked those large and successful transactions the "Société des Métaux" established a well-earned reputation, and, much to the displeasure of consumers of Copper, the great—we may say unprecedented—monopoly stands at the close of 1888 stronger and more formidable than it did a year previous, in spite of the enormous load that has been fast accumulating on its shoulders. M. Secrétan, through his good management of this vast enterprise during the year, has indeed proved himself to be more of a "Grand Français" in 1888, than M. de Lesseps; the monster monopoly has become in the Copper trade the orb around which the proudest companies, the Calumet and Hecla, the Anaconda, the Tamarack, the Rio Tinto and others, have moved liked satellites, and both in Europe and on this side people in the trade have stood fairly aghast at the magnitude and power of this big combination, with the annoying feature attaching to it that, hat in hand, the American consumer has to take the amount of domestic Copper apportioned him at a figure that may be called exorbitant considering the cost of production, and that a group of powerful capitalists from a distance dictates theprice we have to pay for the product of our own mines. Humiliating as the reflection may be, the facts of the case are, however, more or less in keeping with those connected with other big monopolies that have grown up around us at home, being the outgrowth of the spirit of association in its latest, most unpleasant phases. Hence we have to get reconciled to such anomalies, of which the end is not yet to be foreseen. One of the most palpable results has been that the growth of a monopoly of the kind kills speculation on paper in the article monopolized. The lesson which the syndicate gave the bear cliques both in London and New York during the latter half of the past year evidently was not lost upon them, inasmuch as sales for a fall have since then become quite scarce; they would, of course, at once revive, and become more extensive than ever, from the moment the syndicate became seriously threatened or embarrassed in its position from some cause or other not to be foreseen at this writing. Meanwhile bear operations against the syndicate, on this side at least, have become pretty much extinct, depriving the Copper trade of one of its active features with which since the creation of the Metal Exchange we had become so familiar.

The year opened with Chili Bars on the spot in London at £85, and Lake at New York at 16¼¢. Both markets were irregular and weak in January, because the syndicate depressed prices; it was known later on that negotiations for control had meenwhile been set on foot with a number of leading companies in various quarters of the globe, our Lake region included, and London at one time was depressed to £73.15, closing at £78. 12/6, our own market declining to 15.90¢ and closing at 16.60¢. In February Copper continued dull and weak in our own market, going away from 16.60¢ to 16¢; London meanwhile first dropped from £77 to £74. 12/6,

but recovered under purchases made by the syndicate to £79. Smelters in England still declined purchasing furnace material. The Cape Copper Company declared a dividend of £2 ₱ share for the past three months, at the rate of 100 % per annum.

March developed no increase of activity among us, as, the price hardly varying at all from 16¢, the syndicate succeeded in selling the associated English smelters a considerable amount of furnace material, and at the same time secured the Namaqua (South Africa) Company's output for three years at £63. 15/. London opened at £78. 17/6, and closed at £80.

Greater activity and strength developed in our own market in April, and Lake improved from 16¢ to 16.60¢. The closed shafts of the Calumet and Hecla Mine reopened on the 25th, the fire being extinguished. The Osceola Company, of Lake Superior, made a contract at 13¢ ₱ lb with the syndicate for three years, dating from May 1, and half the profit over that figure. There was more doing in London, but no change, the quotation remaining £80. 5/. Toward the close of the month the syndicate threw overboard its holdings of Tin in London, thereby strengthening its hands as a Copper holder.

In May it was stated that the syndicate had made a contract with the leading Copper company in Japan; at the same time the terms transpired of contracts with other companies on the basis of £65 to the English companies, 13¢ ₱ lb and half the profit in all overit, to the Lake companies; all for three years; and 11¢ to the Montana companies, the Anaconda only for the current year, production being stipulated to be curtailed in some of the American contracts. In addition to the contracts named, the syndicate held toward the close of May 45,000 tons of Chili Bars, supposed to average in cost £70. The syndicate made a pool sale to our manufacturers during the month of 10,000,000 lb Lake, spread over three months, at 16½¢. Hardly anything to speak of transpired in our market besides this; opening at 16.65¢, it closed at 16.60¢, London opening at £80. 2/6, and closing at £80. 15/

With the approach of midsummer the dealings in New York in June became trifling in extent; the little done consisted of purchases made by the syndicate, the month opening at 16.60¢, and closing at 16.55¢, the syndicate also buying some futures in London at £78. 7/6, while spot Bars opened at £80. 17/6, and closed at £81. 2/6. The contract of the English smelters came to an end, as it was found not to work to mutual satisfaction; the syndicate then bought furnace material for its own account.

July was moderately active in this market, with a hardening tendency toward the close through covering by the shorts; opening at 16.65¢, the closing figure 16.75¢. London opened at £81. 2/6, dropped to £78. 6/6, and closed at £80. 17/6. The newly established standard alongside of Chili Bars, "good merchantable," advanced from £71. 5/ to £73. 15/. The syndicate bought furnace material freely. The Quebrada Company (Venezuela), producing 2606 tons fine in 1887, sold its estimated production for 1888, 1889 and 1890 to the syndicate; the Parrott Company, of Montana, made a similar contract for 16,500 tons of 2000 lb., all told, at 13¢, and ½¢ of any excess; the Boston Montana Company, 45,000 tons, for delivery over three years, at 12¢. Having been unable to make a contract with the Chili producers, the syndicate was compelled to pay them £77 to £81 as the Copper arrived, while obtaining, as shown above, the product of other producers at £53 @ £65.

In August and September the syndicate put the screws on and squeezed the London and New York bears mercilessly, the price advancing in London from £80. 7/9 on August 1, to £105 on September 10 thence to recede to £91, and wind up September at £101. Lake Copper was driven in the meantime from 16.75¢ to 17.65¢, in order to close September at 17.60¢. Good merchantable brands improved from £73. 10/ to £78. 5/, the adoption of the latter being calculated to present a corner in Chili Bars, as above shown, in the future. To consumers the syndicate sold Chil Bars at £78 throughout the excitement. Meanwhile the notable advance in the discount rate in Europe rendered the holding of Copper over there more expensive. The Mason & Barry Company declared a dividend for the six months at the rate of 9 % ₱ annum, equaling £24 ₱ ton profit on 7000 tons Fine annual production.

Operators for a fall in Copper all the way to January, 1889, had been so much scared on our Metal Exchange, and there was so little Lake Copper available outside of the amount controlled by the syndicate, that speculation received, so to say, a death blow on this side, and did not recover vitality for the rest of the year, *bona fide* consumers being supplied by the syndicate all along at about 1¢ below the nominal quotation on the exchange, the actual transactions at the latter dwindling to smaller and smaller proportions, and gradually becoming virtually extinct. In October the quotation on the exchange ranged from 17.60¢ down to 17.35¢. and in London receded from £101. 10/ to £78 : while this was the case, the syndicate could not well shut its eyes to the fact that the visible supply of Copper in Europe and America increased steadily and in an alarming manner, that consequently either the selling price to consumers would have to be materially reduced so as to stimulate consumption or production curtailed. Not feeling disposed to reduce the price the sydicate in October and November made arrangements with Lake and other companies to reduce the output, and by way of compensation extend the contracts three or four times the original term. Many disinterested parties were at the time and are still of opinion that it would have been still better policy to reduce the figure at which the Copper is sold to consumers still further, and there was considerable disappointment at the non-adoption of such a course. But as the general public is not allowed to peep behind the curtain, and the cost of the Copper now under control of the syndicate may with commissions, interest, storage, freight in moving portions from England to France, &c., &c., be a great deal higher than is generally supposed, the syndicate cannot perhaps afford to reduce the present selling price to consumers to an extent that would be an inducement to consume the metal more freely, and again make use of it where other material has begun to take its place. Under the circumstances, November was about as lifeless in the New York market as it possibly could be, while opening at 17.30¢ and closing at 17.40¢, London hardly varying from £78, at which it opened, closing at £77 10/. Meanwhile, various new Copper companies were being started in different countries, from Portugal to New Zealand, and some curiosity was expressed as to the coming Anaconda contract. In the meantime, the syndicate agreed with the Rio Tinto Company to prolong their contract till the year 1902.

December was ushered in with another fire in the Calumet and Hecla Mine, but it was deemed of minor importance and was got under control with great ease. The rumor received currency that the Calumet and Hecla and other companies had made the syndicate a proposal that the latter should pay them 14¢ in the future, without any share in the profits, instead of 13¢ and a share. This would simplify the accounting and at the same time not keep the same pending so long, while the syndicate would be freer to sell the Copper at such rates as might appear expedient. It was added that there was some probability the syndicate would accede to this. Middle of December the visible supply of Copper in England and France was about 100,000 tons, while the syndicate held on this side 30,000 tons, constituting a total value at current prices of something like $45,500,000. Early in December the syndicate made our manufacturers a pool sale of 20,000,000 lb of Copper, extending over three months, at 16½¢. On our Metal Exchange hardly anything was done in the way of sales, the nominal range being 17.20¢ to 17.40¢, while London was steady at £77.10/.

CORRESPONDENCE.

The St. Croix Range, Wisconsin.

To the Editor: About two years ago this country, known as the St. Croix Range, went through the agonies of a boom—not on iron, but on manganese ore. Reports of vast deposits of rich ore being found were circulated far and near; people went wild, as they generally do when anything savors of a boom. Mining companies to over 50 in number were formed, and every one was to become independently rich in an incredibly short period. However, in almost as short a time as it took to set the boom going, the enthusiasm dropped, and the St. Croix Range was declared a snare and a delusion. I must mention here that, with one or two exceptions, the parties who got up the boom and those who prospected the different companies' lands were lumbermen and farmers, totally ignorant of practical mining, and knew nothing whatever of ores. The excitment was merely created to promote stock-jobbing schemes.

Notwithstanding the chaos reigning and suspicion attached to mining on the St. Croix Range, there were two of us—Mr. J. A. Wilson and myself—who had faith in the range, not as a country containing large deposits of manganese, but one in which there is an extensive deposit of rich limonite iron ore, admirably adapted for foundry and car-wheel purposes. To satisfy ourselves that such was the case we commenced prospecting on one 40-acre tract, located within one mile of the town of Wilson and distant one-quarter mile from the Chicago and Northwestern Railroad, with the most satisfactory results. This property is now known as the Arthur mine. On about ten acres of this 40 alone, all we have as yet tested, we can show, by actual measurement, from 75,000 to 100,000 tons of ore, running as shown by the following analysis and letters from the furnace and foundry where the ore and iron were used:

ANALYSIS.

Silica	7.96
Alumina	1.33
Metallic iron	54.81
Metallic manganese	1.82
Sulphur	0.02
Phosphorus	0.13
Combined water	9.33

Analyst, Professor Dodge.

Metallic iron	55.50
Silica	9.30
Metallic manganese	1.67

Analyst, Doctor Lehnen.

Water	10.60
Silica	6.66
Aluminium	1.30
Iron	54.85
Manganese	1.21
Phosphorus	0.09
Lime	0.99
Magnesia	0.14
Sulphur	0.02

Analyst, Professor Hilte.

BLACK RIVER FALLS, Wis., August 28th, 1888.

J. A. Wilson, Esq.: DEAR SIR—We received three cars of "Arthur" mine ore August 21st, and have put the whole lot (147,580 pounds) through

the furnace, using 130,160 pounds alone, producing therefrom 64,315 pounds of pig iron, a yield of 49.4 per cent., using 114 bushels of charcoal per ton of pig iron (20 pounds of charcoal for a bushel). The rest of the ore was used in combination with Superior, one part of Arthur and three parts of Superior; total, both ores, 64,800 pounds, producing 37,230 pounds of pig iron, a yield of 57.34 per cent., on 91 bushels of charcoal per ton of iron. The first cast of iron, some 12 tons, showed considerable cold shortness, due probably to furnace conditions. The second cast of 16 tons was an average iron in strength, showing good color and quality. Both casts were No. 1 iron. We could use the Arthur ore, if selected, as this lot seemed to be, in mixture with Gogebic ores, whether to advantage as a matter of economy and cost further trial of ore and computation would only make known.

Yours truly,
H. E. BURT, Manager.

Since the above letter was written we made a further shipment of 540 tons of Arthur ore to Black River Falls, which has even given better satisfaction than the first lot, the furnace carrying 200 pounds more to the burden and making good No. 1 foundry on 85 to 90 bushels of charcoal. We have now a contract with the same furnace company (York Iron Company) for 5000 tons to be delivered at the rate of 40 tons per day. We are at present shipping 60 tons per day. The country is of a broken and rough nature, the ore coming to within 3 to 8 feet of the surface, admitting of its being stripped and the dirt got rid of in the cheapest possible manner, owing to the natural dumping grounds. The trend of the iron deposit is a little east of north and west of south, easily traced for several miles, and about 2 to 2½ miles in width.

Underlying the iron ore is a stratum of fairly rich manganese, which, by mixing with the iron ore, would give it the chilling qualities necessary for car-wheel purposes. In connection with the iron ore and manganese there are forests of the charcoal timber—maple, oak, &c.—besides being located within 50 miles of St. Paul and Minneapolis and within easy distance of other growing towns where foundries are in operation. The railroad facilities are good and rates reasonable. Practical men are becoming awake to the fact that, taking into consideration the large deposits of ore, the abundance of limestone and charcoal timber, the handy market and good railroad service, this is a good site for a blast furnace, so that before long I shall have the pleasure of informing you that contracts have been made for the erection of one. Yours truly,

P. A. GOUGH, Sup't Arthur Mine.

WILSON, ST. CROIX COUNTY, WIS., December 15, 1888.

An American in Corea who called on Minister Dinsmore speaks of the condition of trade and the high favor which the king manifests toward citizens of the United States. In making contracts Americans are preferred, and it is suggested that the gold mines offer special attraction. At present gold is extracted by pulverizing the quartz under stone rollers. American cottons are in demand on account of their superiority. The foreign colony at Seoul is almost wholly American, and there is one large trading firm originally from Boston. The King's Royal School for the instruction of young Corean nobles is on the American plan under Professor Bunker. Seoul has a population of 300,000, but the trade is made up of what the Yankees would call a "whittling business."

Duluth, a rising city in the Northwest, during the past year has secured an independent direct railway line to the East, in addition to the advantages of deep water navigation and unsurpassed facilities for handling freights. Rates on goods from New York and Boston are as low as between those cities and Chicago, and Duluth's jobbing trade of late has grown rapidly.

TRADE REPORT.

Chicago.

Office of *The Iron Age*, 95 and 97 Washington street, CHICAGO, December 31, 1888.

The last week of the year has been characterized by general quietness, with consequently but slight variation in prices from those quoted in previous reports. Nothwithstanding the dullness, a very cheerful view of the situation obtains in nearly every branch of trade, and the New Year is expected to bring with it a fair degree of prosperity. At present there is a remarkable dearth of disturbing elements to influence trade in general, while on the other hand enterprises are in progress or contemplated which ought to greatly increase the local consumption of Iron and Steel.

Pig Iron.—Representatives of furnaces in the Mahoning and Shenango Valleys are deeply interested in the advance of 50¢ ℔ ton in freight rates to Chicago which goes into effect to-morrow. They will endeavor to put up the price of their Pig Iron to correspond, but it is questionable if the market will stand it. A similar advance in freight rates is expected from other points in Ohio. The manufacturers consider this action by the railroad companies unwarranted by the condition of trade, and will do all in their power to get rates reduced to the old standard. It is remarkable that this advance has been made by Northern railroad companies just at a time when the Southern railroads have made a reduction of 20¢ ℔ ton on Pig Iron coming to the Northwest. Sales during the week have been quite limited, but inquiries are numerous, and are expected to lead to good business in January. Regular quotations are as follows for cash, f.o.b. Chicago: Lake Superior Charcoal, all numbers, $19.50 @ $20.50; Alabama Car-Wheel, $26.25; Jackson County Softeners, No. 1, $18.60; American Scotch (Blackband) No. 1, $20 @ $20.50; Hocking Valley Soft Foundry, No. 1, $17.50 @ $18.50; Lake Superior Coke, No. 1, $17.50 @ $18; No. 2, $16.50 @ $17; No. 3, $15.50 @ $16; Coke Bessemer, $17.50; Southern Coke, No. 1 Foundry, $17 @ $17.25; No. 2 Foundry and No. 1 Soft, $16.25 @ $16.50; No. 3 Foundry and No. 2 Soft, $15.50 @ $15.75; Gray Forge, $15; Mottled, $14.25.

Bar Iron.—Considerable skirmishing for orders has taken place recently, and prices have receded slightly on Mill lots. Yet business is fairly active, and some large sales have been made. Common Bars are still quoted at 1.72¢ @ 1.75¢, half extras, f.o.b. Chicago, for Mill lots, and 1.90¢ @ 2¢ from store, but the advance in freight rates after January 1 will make the Mahoning Valley mills put their price to 1.75¢ @ 1.78¢, Chicago, and may also stiffen the views of others.

Structural Iron.—Orders for bridge material to the extent of 1500 tons were taken during the week, and some good Beam contracts for new buildings will shortly be placed. An advance of 2½¢ ℔ 100 lb in freight rates from Pittsburgh is expected to stiffen weak spots recently developed. Quotations on Mill lots are as follows, f.o.b. Chicago: Angles, 2.15¢; Universal Plates, 2.20¢ @ 2.25¢; Tees, 2.55¢ @ 2.60¢; Beams and Channels, 3.40¢. Store prices are unchanged at 2.35¢ @ 2.50¢ for Angles; 2.60¢ @ 2.70¢ for Tees, and 3.80¢ for Beams.

Plates, Tubes, &c.—Nothing new has developed in this line, business having been quiet. Store prices are still as follows: Heavy Iron Sheets, Nos. 10 to 14, 2.60¢ @ 2.70¢; Steel Sheets, 3¢ @ 3.50¢; Tank Iron, 2.55¢ @ 2.65¢; Tank Steel, 2.75¢; Shell Iron, 3¢; Shell Steel, 3.12½¢; Flange Iron, 4¢; Flange Steel, 3.50¢; Fire-Box Steel, 4.75¢ @ 5.75¢; Boiler Rivets, 4¢ @ 4.25¢; Ulster Iron, 3.75¢. Boiler Tubes, 60 % and 62½ % off.

Sheet Iron.—Mill lots of Black Sheets are quoted at 3¢ @ 3.02½¢, f.o.b. Chicago for No. 27. From store No. 24, sells at 3.10¢; Nos. 25 and 26 at 3.20¢ and No. 27 3.30¢ Small lots of Galvanized are unchanged at 60 % and 5 % off for Juniata, and 60 % and 10 % off for Charcoal. The demand has been checked for the time being, but stocks of the sizes and qualities most needed are still very low in all the warehouses.

Merchant Steel.—Some scattering sales of Spring and Machinery Steel are reported, but most houses have done very little business during the week. Quotations from stock are as follows: Bessemer Bars, 2.30¢; Tool Steel, 8.50¢ @ 9.50¢; Specials, 13¢ @ 25¢; Crucible Spring, 3.75¢; Open-Hearth Spring, 2.50¢; Open-Hearth Machinery, 2.40¢ @ 2.75¢; Crucible Sheet Steel, 7¢ @ 10¢.

Steel Rails.—No orders have been taken by local mills since our last report, but the inquiries in hand show that the railroad companies who have not yet closed for their year's requirements are being influenced by the recent stiffening of prices and will soon place orders for considerable quantities of Rails. The mills are firmly maintaining their quotation of $30 and hope to be able to realize more in the near future.

Old Rails and Wheels.—A vigorous effort was made by some holders to sell their stocks of Old Iron Rails, for which they asked $23, but they were unable to find any consumers within reach of this market willing to pay so much. A fair quotation is probably $22.25 @ $22.50. Renewed interest is manifested in Old Steel Rails, which can be sold at $16 @ $20, according to length, freedom from frogs, &c. Old Car-Wheels are being offered more freely, but the demand for them is light, $19 being bid and $19.50 asked.

Scrap.—Very light sales are reported. The continued mildness of the season has a tendency to keep stock plentiful and to weaken prices. An increased business is reported in New Axles, but it is not as yet sufficiently strong to affect the Scrap market. Quotations for carefully selected are as follows ℔ ton of 2000 lb: No. 1 Railroad Wrought Scrap, $20.50 @ $21; No. 1 Wrought, from city dealers, $21; Track Scrap, $20.25 @ $20.50; No. 1 Mill, $14.50 @ $15; No. 2 Mill, $10; Horseshoes, $20; Axles, $26.50; Pipes and Tank, $13; Cast Machinery, $14 @ $15; Stove Plate, $11.50; Borings, $10; Turnings, $11; Axle Turnings, $13; Mixed Steel, $12.50; Coil, Leaf and Tire Steel, $16. Mixed Country Scrap is worth $15.

General Hardware.—The week has been pretty generally given up to stock-taking, making contracts with traveling salesmen for the coming year, reviewing the methods of the past and laying out the campaign for the future, and as far as possible getting matters in good shape to handle the business of 1889, which the jobbers of this city confidently expect will show a handsome increase over that of 1888. The only change in prices worthy of note is an advance in Sledges, which are now quoted to the ordinary trade at 70 % off, instead 70 % and 10 % off.

Nails.—Wire Nails are now selling at $2.50 from stock and $2.45 in mixed carloads, the manufacturers' price being $2.40 in large lots Heavy purchases are being made at these reduced rates, but some manufacturers are refusing to book orders for delivery beyond January, in the

hope that prices can be advanced speedily. Steel Cut Nails are sold from stock at $2 and in carload lots at $1.95. When necessary to compete with manufacturers, these rates are shaded. The jobbers are still selling from stocks bought before the advance was made by the manufacturers, hence are able to compete with them. Manufacturers' prices are reported to be very firm at $1.80, at mill.

Barb Wire.—Although some manufacturers have refused to sell for future delivery others have taken large orders and announce their capacity covered up to May. The price of Barb Wire is now a great deal firmer than it has been, but very low prices were made during the past month, Painted selling as low as 2.62½¢, and Galvanized 3.25¢, which are believed to be the lowest prices ever accepted. Manufacturers' quotations for large lots are now 2.75¢ for Painted and 3.40¢ for Galvanized. Jobbers quote 2.90¢ for Painted and 3.60¢ for Galvanized in small lots, with the usual reduction for mixed carloads.

Pig Lead.—The week past has been very quiet, with 3.55¢ bid and 3.60¢ asked. Everett & Post have made a *résumé* of the year's business, from which we quote: "It is impossible to give an exact estimate of the production of Lead in the United States, but from what reports we have in we place it at 172,000 tons. The increased consumption may be accounted for by reason of large demand for underground cable work, water works, &c., and there is every reason to expect an increase of at least 10 % more in these several directions during the next year. Business at Chicago has been some 5000 tons in excess of any former year. The lowest price for the year was in December, and the highest in September. Monthly averages for the year in Chicago are as follows:

	Cents.		Cents.
January	4.875	July	3.85
February	4.80	August	4.30
March	4.80	September	4.875
April	4.45	October	4.55
May	4.15	November	3.525
June	3.85	December	3.50
Average for the year			4.30
" "		1887	4.343
" "		1886	4.50
" "		1885	3.83
" "		1884	3.58

The North Chicago Rolling Mill Company have put one of their North Chicago furnaces in blast on Spiegeleisen with very satisfactory results. It has been in operation over three weeks and produces about 600 tons per week of 30 per cent. metal. The Ores used are from Batesville, Ark., and sufficient supply has been received to enable the furnace to run on this class of material through January. A small quantity of Spiegeleisen has been made heretofore in a few furnaces in the West, but merely as a matter of experiment. This is the first case, so far as our knowledge goes, of the manufacture of Spiegeleisen on a considerable scale in the Western States.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St.,
PHILADELPHIA, Pa., December 31, 1888.

Pig Iron.—The year 1888, although in many respects unsatisfactory to manufacturers, has been, on the whole, one of extraordinary development, and consumption, except for Rails, larger than at any time in the entire history of the country. The only really weak spot has been the Rail trade, but apart from that there is reason to believe that almost every consuming interest has been enlarged and strengthened to an unprecedented extent. Consequently the continuous large output of Pig metal has been absorbed without materially influencing prices, which at the close of the year show a decline averaging about $1 ℔ ton on Mill Irons, and $2 on Foundry grades. The opening prices in January were $20.50 @ $21 for No. 1 Foundry and $17 for Gray Forge, as against $18 @ $19 for No. 1, and $16 for Gray Forge during the the last week of December. The furnace output of Anthracite and Coke (omitting Charcoal) for the 12 months is estimated at about 5,970,496 tons, the weekly output on the first of each month having been as follows:

January 1	121,307	July 1	102,021
February 1	103,901	August 1	108,252
March 1	97,490	September 1	114,623
April 1	101,140	October 1	119,189
May 1	106,818	November 1	128,340
June 1	107,845	December 1	136,627

The fluctuations in prices were very light, considering the large amount of business that was done, the month of May having seen the lowest figures of the entire year. The Thomas Iron Company reduced their prices $2 ℔ ton during that month, and still continue at the figures then announced —namely, $16, $17 and $18, at tide, for the three grades. The weakest period was during the months of May, June and July. During August the demand showed signs of improvement, which become still more pronounced in September, and so continuing until about the middle of October, since which date the feeling has been less buoyant, prices gradually losing pretty nearly all that they gained. The record of the year, therefore, is not specially important, and has developed nothing calling for extended comment. The local market has not been interfered with very much by Southern Irons, although they are formidable competitors north and east, and to some extent at points within 100 or 150 miles south and west of Philadelphia. Western Irons are gradually working their way into the local foundries, and are now regarded as having a permanently established trade. Cornwall Red-Short Irons have monopolized an increasing amount of attention, and for awhile sold at the lowest figures on record—viz., $14 ℔ ton, f.o.b. cars at furnace. Consumption of Cornwall Irons during 1888 is estimated to have been close on to 300,000 tons, with a steadily increasing demand. Prices are not quoted on these Irons at present, as they have a large amount of orders on their books, and are not in a position to accept outside business until some of these contracts are completed. Nominally quotations are $16 at furnace, but no transactions of recent date have been reported. General consumption in and around Philadelphia is believed to keep pace with that at other points, which of course implies a very considerable growth. As regards the outlook during the coming year, the general idea is that consumption will be larger than ever. The Steel-Rail interest seems to be the only one that is in a doubtful position, and even that may soon feel the effects of the recent arrangement for avoiding disastrous competition among the railways. The general business of the country is in excellent condition. Locally, there probably was never a time in which the volume of business averaged larger than at present. Shipbuilding, locomotive, car and bridge building, engineering, machinery and all the diversified interests clustering around Philadelphia report an abundance of orders, so that there is every reason to expect a continued large consumption of Iron. The stove trade is the only one that seems to have been a little overdone, but even that, with a change to colder weather, may receive a new impulse and enable manufacturers and dealers to relieve themselves of somewhat inconvenient accumulations of stock. But taking the position as a whole, the feeling is very hopeful, and there is reason to believe that the volume of business will be in every respect equal to, if not larger than, that of any previous year. Prices are not yet fully established, but are likely to be about the same as those ruling for some time past, viz.: $16 at tide for Gray Forge, $17 @ $17.50 for No. 2 Foundry and $18 @ $19 for No. 1. The feeling is not so settled as could be desired, however, and much will depend on the demand during the next two or three weeks. If consumers take hold promptly, prices will soon become steady, but another month as dull and unsatisfactory as December has been would probably cause some parties to cut under, and so demoralize the entire market. There will be plenty of business before long. The question is, Can the enormous supply of Iron be taken without breaking prices?

Manufactured Iron.—Prices have kept very well in line with Pig Iron, the highest having been realized during January, and the lowest during May and June. The demand has been fairly uniform, and on the whole the year was tolerably satisfactory to manufacturers. Prices have been low, and the margin for profit small, but with full employment during the greater portion of the year, cost of production has been at a minimum, offsetting in some measure, the extremely low prices obtained for a large proportion of the product. One reason for the low prices has been the aggressive attitude of some of the large Steel companies. Steel Plates have been sold from Pittsburgh at much lower prices than local mills could accept, and business during the entire year has been more or less under the influence of quotations from that source. Consumption of Finished Iron was very large during the year, probably the largest on record. All departments have had a good run of business, and, so far as can be seen, the prospect for the coming year is equally favorable. There is no special run on any one department, but the demand is well distributed, car, locomotive, bridge and ship builders having plenty of orders, while the smaller industries are busier than they have been for some time. The Wrought-Iron Pipe mills have taken a great deal of material during the year, and expect to do equally well during 1889, as there is expected to be a heavy demand for Pipe. The capacity for production, however, has not only prevented any advance in prices on Finished Iron, but, on the contrary, has caused a shrinkage during the year, averaging about $3 ℔ ton. In some extreme cases there may have been a difference from highest to lowest of probably $5, but comparing the last week in December, 1887, with the last in 1888, the average decline will not be more than $3 ℔ ton. Car builders have been the heaviest buyers of Bar Iron, and Wrought-Iron Pipe manufacturers have also taken a large amount of Skelp. The Plate mills have also been kept pretty fully employed, but it has been difficult to maintain prices because of Pittsburgh competition. The highest prices were during January—viz., Bars and Grooved Skelp, $1.95, and Plates, $2.15. During April and May prices began to droop, a decline of nearly two-tenths having been established before the middle of June. Prices continued weak during July, but in August symptoms of improvement developed, which during September resulted in an advance of about a tenth in Plates and Bars, and a tenth and a half in Skelp, which was fairly maintained until about the middle of October, when a drooping tendency again manifested itself. Since that date the feeling has been rather heavy, and while prices are nominally about a tenth above the lowest prices of the year there is too much reason for the belief that buyers will not come in unless liberal concessions are allowed on large orders. Meanwhile,

it's market, a waiting plenty of business to be done, but with some uncertainty in regard to prices, although they cannot under any circumstances be materially lower than they now are. Asking prices, 1.8¢ @ 1.9¢ for Bars, 1.85¢ @ 1.87½¢ for Skelp, and 2¢ @ 2.1¢ for both Plates and Angles.

Steel Rails.—The year just closed has been one of the most satisfactory ever experienced by Steel-Rail manufacturers. Prices opened in January at $31.50, remained on that basis until June, when they reached $30, remained at that figure during July, down to $29 in August, $28.50 in September, and to $27.50 in November, with some transactions said to be at less than $27. During December prices became firmer, with $28 as a minimum, and so continue to this time. As an offset to the falling off in production, the demand for Steel in other forms has greatly increased, some of the mills disposing of from 25 to 30 % of their product in this way. The outlook for the incoming year is still uncertain, sales to date for 1889 delivery being less than 500,000 tons. Some of the works are closed for an indefinite period, and the chances do not appear to be very favorable for an early resumption, although if the railways settle their grievances things may improve sooner than at the moment seems probable.

Old Rails.—The scarcity of Old T Rails is shown by an examination of prices during the past 12 months. Commencing at $22.75 in January and advancing to $22 in February, they lost only 50¢ during March and April, partly regained it during May, selling down to $21 during June, July and August, advancing steadily from that point to $23 during September, and fluctuating between that figure and $24 to the close of the year. Stocks are lighter than have been known for many years, and it is a remarkable coincidence that Old Iron Rails sell within $4 or $5 per ton of the price of New Steel Rails.

Mr. W. H. Blakey, formerly with W. H. Walbaum & Co., and Mr. Geo. D. McLellan, from the well-known house of James Watson, of Glasgow, have formed a partnership as Blakey & McLellan, and will do a general Iron business as agents for James Watson. The offices of the new firm will be in the Bullitt Building, Fourth below Walnut street.

Pittsburgh.

Office of *The Iron Age*, 77 Fourth Ave., PITTSBURGH, December 31, 1888.

In regard to the year just closed, there has probably never been in the history of Pittsburgh a larger volume of business, but owing to an active competition margins have been comparatively small, and there is a good deal of complaint in regard thereto, but in this respect Pittsburgh has been no exception. There have been very few failures among our manufacturers during the year just closed, and they were never perhaps in a more solid condition. As respects the new year, the outlook is generally regarded as encouraging; manufacturers expect that it will be fully equal to 1888, and they are hopeful that there will be an improvement in the matter of profit. Reports from the West and South, upon which Pittsburgh is dependent largely for a market for her manufactures, are generally of a favorable character, and these is no reason apparent at present why the expectations of our manufacturers should not be realized.

Pig Iron.—A break in the market just at the close of the year was not generally expected, but it has taken place; all grades of mill and foundry irons have gone off 25¢ to 50¢ ℔ ton within the past couple of weeks, and there is no assurance that they will not go lower. City furnacemen are held responsible for this decline; furnacemen in the Shenango and Mahoning valleys are generally well filled up, and so far as we can learn, they are refusing to meet the decline in this market. A valley furnaceman reports that nearly all the valley furnaces are sold ahead, that there is very little stock in first hands, and his view is that the cost of production is more likely to be increased than reduced, and that the action of furnacemen here, in making concessions in order to effect sales, was uncalled for. Quotations may fairly be given as follows:

Neutral Gray Forge	$15.50 @	$15.75,	cash.
All Ore Mill	16.25 @	16.50,	"
White and Mottled	14.50 @	15.00,	"
No. 1 Foundry	17.50 @	17.75,	"
No. 2 Foundry	16.75 @	17.00,	"
No. 3 Foundry	16.00 @	16.25,	"
No. 1 Charcoal Foundry	23.50 @	24.00,	"
No. 2 Charcoal Foundry	21.50 @	22.00,	"
Cold Blast Charcoal	25.00 @	28.00,	"
Bessemer Iron	17.00 @		"

In regard to Bessemer, while it is offering freely at $17, cash, there have been no sales that we can hear of reported below that price; there was a sale of 3000 tons reported for January, February and March at $17, cash, and a broker has some 10,000 tons to sell in different lots, none of which is to be had under $17, cash. But very few sales of Mill Iron reported during the past week, but good brands are to be had at $15.50 @ $15.75, cash, and there are but few buyers above $15.50.

Muck Bar.—There is no improvement in the demand, and prices continue weak and drooping; we now quote at $28.50, cash at which it is being offered, and this intimates that it might possibly be had at $28, cash. A month or more ago it was difficult to obtain; now sellers greatly outnumber buyers.

Manganese.—Ferromanganese, 80 %, $55 @ $56 ℔ ton, Spiegel, 20 %, $28 @ $28.50.

Manufactured Iron.—There are but few new orders coming forward just now, but an improved demand is looked for before the close of the month. Bars, $1.80 @ $1.85; Plates, $2.20 @ $2.25; No. 24 Sheet, $2.85 @ 2 90; Skelp, $1.70 to $1.80 for Grooved and $1.90 @ $1.95 for Sheared. All 60 days, 2 % off for cash.

Nails.—There is no improvement in the Nail trade here, nor can be expected as long as buyers can do much better elsewhere. We continue to quote upon a basis of $1.90 for 12d to 40d, 60 days, 2 % off for cash.

Wrought-Iron Pipe.—There is but little change in the situation. Business continues light as compared with what it was during the summer and fall, although all that can be expected at this particular time. It is worthy of mention that there is an increasing demand every winter apparently for Pipe; houses are being built, gas and oil well pipe lines being laid now, but of course nothing like there is during the summer. Prices continue irregular and are difficult to quote correctly. Discount on Black Butt-Welded Pipe in car lots, 52½ and 5 %; On Galvanized, do., 45 and 5 %; on Black Lap-Welded Pipe, 62½ and 5 %; on Galvanized, do., 52½ and 5 %; 2-inch Tubing, 13¢ ℔ foot, net; 5⅝-inch Casing, 37½¢ ℔ foot, net.

Old Rails.—We are advised of sales of some 4700 tons of American Tees, standard brands, at $25 @ $25.25, which may be regarded as the ruling prices. Sales Old Steel Rails at $18.50 for short and $20.50 for long lengths.

Billets, &c.—There is very little demand at present for Bessemer Steel Billets, and the market is easier. It may be quoted at $28, cash. Nail Slabs, $27.75 @ $28; Domestic Bloom and Rail Ends, $19 @ $19.50, with but few offering, and until recently considerable inquiry.

Steel Rails—Are still quoted in a regular way at $28, cash, at mill. While Chicago has the advantage of cheaper transportation it is claimed that this is more than overcome here by labor, as it is said that wages are cheaper here than at Chicago.

Railway Track Supplies.—There has been no recent change in prices. Spikes $2.10, 30 days; Splice Bars, $1.80 @ $1.85; Track Bolts, $2.80 with Square and $2.90 with Hexagon Nuts.

Old Material.—Demand continues light, but an improvement is expected before close of this month. No change in prices. No. 1 Wrought Scrap remains unchanged at $21, net ton; Wrought Turnings, $13 @ $14; Car Axles, $25 @ $26; Cast Scrap, $15.25 @ $16, gross; Cast Borings, $12 @ $13; Old Wheels, $19.50 @ $20.

Cleveland.

CLEVELAND, December 31, 1888.

Iron Ore.—During the past week 20,600 tons of Ore were sent forward to furnaces, as against 14,600 tons for the same week last year. Furnaces in the Hocking Valley are filling out their Ore stocks, with a few all-rail shipments from Escanaba. The Ore is a non-Bessemer Hematite and costs the consumer not far from $5.10 per ton delivered at the furnace. These shipments are explained by the fact that the buyers hesitated about increasiug their Ore stocks until assured of sufficient orders to warrant such action. The demand came after the close of navigation and it became necessary to arrange for overland transportation. Many of the Ore companies will hold their annual meetings during the next two weeks and an approximate schedule of prices for 1889 will then be determined upon. Several furnacemen have already asked for quotations and active negotiations will begin within 12 or 15 days. Bessemer Ores are somewhat depressed because of the lack of activity in the Rail market.

Pig Iron.—Both buyers and sellers seem content to wait until after the holiday season before making any attempt to infuse life into the market. Nothing important in the way of sales has occurred during the week just closed. Furnacemen do not seem anxious to press their products upon the market, inasmuch as many of the furnaces are still running on old orders. The opinion that heavy orders for Mill and Foundry Iron will be placed in January seems universal. The Agricultural Implement interests will then make themselves felt and the tone of the market will, it is believed, be improved.

Manufactured Iron.—Although the mills are running on full time prices are becoming more favorable to buyers. Common Bar Iron has dropped to $1.60 and Sheets are correspondingly depressed.

Old Rails.—Old American Rails are now selling at $23.75 @ $24. Turnings are selling for $14 @ $14.50.

Coke.—Although higher prices are expected, Coke can still be bought at $1.25 ℔ ton at the ovens. The market is active.

Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, December 31, 1888.

Pig Iron.—There has been but little change in the local market for Pig Iron during the week, but during the month a decided weakening has occurred, which has been manifested in a decline in prices. The prime cause for the reduction has been the increased production, and several furnaces have forced sales which have been used by buyers to magnify the tenderness of the market. The past week

has been devoted to the settlement of old scores rather than to the expansion of business, yet, while the volume of business has not been large and the majority of trades of small amounts, there have been one or two transactions of moment, one being the sale of over 10,000 tons Forge Iron for delivery during the first half of next year, at about $14, cash, here. Prices of Forge and Foundry Iron, while exhibiting same easiness, are without quotable change.

Foundry.

Southern Coke, No. 1 (new classification)	$16.25 @ $16.75
Southern Coke, No. 2 (new classification)	15.50 @ 16.00
Southern Coke, No. 3 (new classification)	15.00 @ 15.25
Ohio Soft Stone Coal, No. 1	17.00 @ 17.50
Ohio Soft Stone Coal, No. 2	15.50 @ 16.00
Mahoning and Shenango Valley	18.00 @ 18.50
Hanging Rock Charcoal, No. 1	21.00 @ 22.50
Hanging Rock Charcoal, No. 2	19.00 @ 22.00
Tennessee and Alabama Charcoal, No. 1	18.50 @ 19.50
Tennessee and Alabama Charcoal, No. 2	17.50 @ 18.00

Forge.

Strong Neutral Coke	15.00 @ 15.25
Mottled Neutral Coke	14.00 @ 14.25
Gray Forge	14.50 @ 14.75

Car-Wheel and Malleable Irons.

Southern Car-Wheel	20.00 @ 25.00
Hanging Rock, Cold Blast	22.00 @ 25.00
Lake Superior Car-Wheel and Malleable	21.00 @ 22.00

Manufactured Iron.—There has been but little change in the temper of the market. Little effort has been made to effect sales and no disposition has been shown to make purchases of moment. Lower prices have been talked of in some quarters, but the general market has been steady.

Old Material.—The demand has been only moderate, but the offerings have not been pressing and prices have remained steady at $19 @ $19.50 ₱ ton for Old Wheels and $23 for Old Rails, cash, Cincinnati.

Nails.—There has been a quiet and easy market for round lots, and only a moderate demand for jobbing lots.

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts.,
CHATTANOOGA, December 31, 1888.

Pig Iron.—The demand has been about the same as before, and the shipments, perhaps, a little falling off in volume. Were it not for the large amount of orders that the furnaces have taken to be shipped soon after the beginning of the new year and during the first half of the year, the prospects might be called a little dull, but as it is, there are very few stacks but what are quite independent, especially for the first half of the year. We can hear of no sales at less figures than have ruled during the past two or three weeks, although there must have been some concessions, as a number of large round lots have been placed with some of the furnaces. The prospect is now that the new year will open with a very brisk demand, and a good trade for the entire year is anticipated from the fact that many large consumers, who have placed their orders, are now corresponding with a view of ascertaining prices for the coming year.

Louisville.

LOUISVILLE, KY., December 31, 1888.

Pig Iron.—There has been no change in the market, prices remaining the same as last week. Sales for immediate delivery have been few save for special grades of Iron. There are a number of inquiries from parties desiring to make purchases running through 6 to 12 months. Their views, however, are very low, and most furnaces are not willing to meet them for such long deliveries, hoping that the first of the month will show a slight improvement. One or two of the leading furnaces have already made sales running for such extended deliveries that buyers feel that the market can show no immediate improvement. It is hoped, however, that by the middle of January the present inquiries will result in sales whose tendency will be to help the market, as there is no reason why Iron should be selling so low at present. We quote as follows:

Southern Coke, No. 1 Foundry, new classification	$15.50 @ $16.00
Southern Coke, No. 2 Foundry, new classification	15.00 @ 15.50
Southern Coke, No. 3 Foundry, new classification	14.50 @ 15.00
Gray Forge	14.00 @ 14.50
White and Mottled, different grades	13.50 @ 14.00
Silver Gray, different grades	13.75 @ 14.50
Southern Charcoal, No. 1 Foundry	16.50 @ 17.00
" No. 1 Mill	15.25 @ 15.75
Southern Car-Wheel, standard brands	22.50 @ 23.50
Southern Car-Wheel, other brands	18.50 @ 20.00
Hanging Rock Coke, No. 1 Foundry	16.00 @ 16.50
Hanging Rock Charcoal, No. 1 Foundry	20.00 @ 21.50
Hanging Rock, Cold Blast	21.25 @ 24.25

New York.

Office of *The Iron Age*, 66 and 68 Duane street,
NEW YORK, January 2, 1889.

Foundry Pig.—The volume of business has naturally been very moderate, and no marked movement in either direction has taken place. On the whole, however, the tone is less confident than it was a month ago. We quote No. 1 Foundry, $18 @ $19, and No. 2 16.50 @ $17.50.

Scotch Pig.—We quote: Coltness, $20.50 @ $21; Shotts, $20.25 @ $20.75; Langloan, $20.25 @ $20.50, and Dalmellington, $19.50 @ $19.75.

Spiegeleisen.—We quote $26.75 @ $27 for 20 %, and $54 for 80 % Ferro.

Plates.—We quote Iron Tank, 2¢ @ 2.2¢; Shell, 2.25¢ @ 2.4¢; Steel Tank and Ship Plate, 2.15¢ @ 2.25¢; Shell, 2.35¢ @ 2.5¢; Flange, 2.6¢ @ 2.75¢, and Fire-box, 3¼¢ @ 4¢.

Structural Iron.—We quote Sheared Plates, 2¢ @ 2.1¢; Universal Mill Plates, 2.1¢ @ 2.2¢; Angles, 2¢ @ 2.10¢; Tees, 2.5¢ @ 2.6¢, and Channels and Beams, 3.3¢ on dock for all sizes. Foreign Beams are quoted 2.55¢ @ 2.75¢.

Bar Iron.—We quote: Carload lots on dock, half extras, Common; 1.7¢ @ 1.75¢; Medium, 1.75¢ @ 1.8¢, and Refined, 1.8¢ @ 2¢.

Steel Rails.—Eastern mills have sold during the past week about 20,000 tons of Steel Rails, one block for Virginia delivery being a part of the business. Prices still continue somewhat uncertain, all of the sales noted above being at private terms. Reports from the West indicate a quiet week.

Old Rails.—No transactions are reported. Some buyers are in the market, but do not seem disposed to pay present prices, while holders are generally stiff. We quote Tees nominally, $23.25 @ $23.50, and Double Heads, $24.

Spikes.—The market is dull, with Spikes at $2.10 @ $2.15 for large lots, delivered, and Angle Bars, 1.85¢ @ 1.9¢.

Financial.

The year 1889, it is agreed by common consent, opens auspiciously. No evil omens are discerned in the distance that excite apprehension, though ample field for statesmanship will open in settling the tariff question in its relations to the Treasury surplus, and the redundant issue of silver dollars will no less command attention. During the past few days holiday interruptions, the annual stock-taking, a temporary tightening of money market and other conditions incidental to the closing season of the year tended to restrict business, but in all trade circles there is a confident tone, based on the conviction that a season of renewed activity is approaching. Stocks of merchandise have not accumulated to excess with rare exceptions, labor is well employed, and in nearly all branches of manufacturing there is a wholesome activity. The most noticeable factor just now is the apparent restoration of railroad freight tariffs to an equitable basis, with at least a reasonable promise of permanency. True, rivalries of agents, combinations among shippers and disagreements among speculative managers may bring a renewal of war, but restrictions are imposed under the new agreement that cannot well be disregarded. As regards the Interstate Commerce law, Senator Cullom says that if any legislation takes place in the direction of a repeal of the prohibition of railroad pools it must be by the next Congress, after a full investigation of the facts and circumstances.

The Stock Exchange markets were only moderately active. On Thursday apprehensions of tight money and a break in Cotton Oil Trust certificates were fully offset in their effects by the declaration of regular dividends on all the Vanderbilt properties, stockholders of Lake Shore receiving an extra 1 per cent., while New York Central promised to restore the 5 per cent. basis this year. Moreover, the T. C. C. & I. declared a dividend of 1¼ per cent., the first since 1883. On Friday Lackawanna declared its regular dividend on the strength of a statement claimed to be the best in the history of the road. The Delaware and Hudson was credited with having earned 14 % in the year 1888, against 11⅞ % in 1887. On Monday the market was strong at the close, although money loaned during the last half hour at 10 %, the highest of the year. Reviewing the year, a comparative table of values shows that 40 active stocks have made important fluctuations. The average price of these 40 stocks on December 30, 1887, was 63⅜. The average price at the close of the market on Saturday last was 68⅞, showing that the general market is on a slightly higher basis than a year ago. Twenty of the 40 stocks were higher at the close of the year than at the opening, and one, Michigan Central, is unchanged.

The Western rate wars furnished the bears with a basis of operations throughout the year. The most important and favorable development was the success of the Reading bond deal abroad in June.

United States bonds were firm at the following quotations:

U. S. 4½s, 1891, registered	108½
U. S. 4½s, 1891, coupon	108½
U. S. 4s, 1907, registered	127⅜
U. S. 4s, 1907, coupon	128⅜
U. S. currency 6s, 1895	119

The total amount of bonds purchased to date under the circular of April 17th is $101,705,500, of which $51,396,650 were 4 % and 50,308,850 were 4½ %. The total cost of these bonds was $120,244,090, of which $66,010,877 was paid for the 4 % and $54,233,213 for the 4½ %. The Treasury surplus on Saturday was stated at $57,500,000. The recent scanty offerings of 4½ % on bonds attracted more attention, and the increased price named by the Treasurer, 108⅛, suggested the possibility of a change of policy. The amount of this class outstanding is estimated at $183,000,000.

The weekly statement of the New York banks showed a decrease of $1,095,000 in surplus reserve, which stands at $6,281,350, against $8,559,150 at the corresponding time last year, and $12,271,350 in the first week of January, 1887, but this occasions no anxiety, as the local banks have large amounts available at interior points. In loans there was an expansion of $1,297,000. Specie unexpectedly decreased $1,246,000. In the money market

there was a marked easing of rates. Time funds continued quiet at about former quotations for two months, and ½ % lower, at 4½, for 60 days to three months. Call loans ruled about 4 %. Commercial paper rates were a little easier. Money on call was active last week, on two occasions ranging 8 %, the highest of the year. Time loans were quoted 4½ @ 5 % for 30 @ 60 days; longer dates, 5 @ 5½ %. Commercial paper was in good demand, the supply limited. The disbursements of money in New York during the first week of the year on account of dividends and interest make an aggregate of $65,000,000, promising easy money at an early date. Boston and Philadelphia each disbursed about $10,000,000. Marketing the cotton crop weakened sterling, which is quoted $4.85½ @ $4.89½.

In the general markets most of the speculative commodities betray the same signs of weakness observable for some time past, but the closing days of the year brought more strength. In wheat there was more confidence, in prospect of better exports, and flour for export was ordered more freely at higher prices. The turn of the year was awaited with some interest. The grocery trade was pronounced to be in a decidedly favorable position. According to the Custom House report, the exports of specie were $691,000, making a total since January 1 of $46,208,804, against $18,501,346 for the same time in 1887. The imports of specie were $164,000, and since January 1 $7,469,901, as compared with $40,077,124 for 1887.

Spot cotton was fairly active at former quotations. Trade in dry goods was light.

The Committee of East-bound Freight Traffic decided that on January 10 the rates on articles of iron and steel manufacture, under head of special iron articles, should take fifth-class rates in carloads and sixth class in less than carloads, and scrap iron should also be governed by this rule.

The forthcoming report of the New York Chamber of Commerce for the fiscal year presents some interesting statistics relating to the foreign commerce of New York, as compared with the aggregate of all other ports of the United States. Total value of imports 1887–88: Port of New York, $510,268,432; aggregate of all other ports, $273,026,668. Total exports of domestic merchandise: Port of New York, $325,789,244; aggregate of all other ports, $391,268,364. Excess of foreign imports over domestic exports at the port of New York, $184,498,188; same for all ports of the United States, New York included, $66,237,492. A comparison of the commerce of the years 1887–88 and 1886–87 shows an increase at the port of New York of $19,717,963; for all ports in the United States, $20,992,328. Last year's foreign commerce for the port of New York exceeds that of any year since 1881 and for the whole country since the same year.

The number of mercantile failures in the United States during the year 1888 aggregated 10,587, which is 847 more than for 1887. The number in New York City was 529, against 432 in 1887. The clearings of 40 cities for the week ended December 29 showed an increase of 19.6 % compared with last year. Outside of New York the increase is 9.6 %. New York increased 25.4; Boston, 22.1; Philadelphia, 13.1; St. Louis, 35.7; New Orleans, 6.7; Baltimore, 0.4; Pittsburgh, 19.8; St. Paul, 26; Minneapolis, 27.2; Denver, 35.4. Chicago decreased 10.9.

The Niagara River Iron Company's extensive plant, at Ironton, on the Niagara River, below Tonawanda, which has been standing idle for the past 11 years is now about tobe revived. The works have been leased by the bondholders, to parties interested in iron manufacture in Western Ohio. The lessees will put the plant in order, and "blow in" as soon as possible for the manufacture of pig iron. They will probably employ a large number of men. The property represents an investment of over $400,000.

Coal Market.

The Anthracite Coal trade is dull and uneventful. The chief anxiety among producers is to prevent undue accumulation and uphold prices. Meetings of Coal trade managers, held during the last days of the old year, had no practical result, further than a mutual understanding respecting the necessity of adhering to the policy pursued of late in regard to maintaining the relations of supply and demand. No changes were made. The statistics of production during the week ended December 22 show a falling off of 25 %, compared with the corresponding week in November, the total from all the mines being 618,534, which is about 60,000 less than for the previous week and 75,000 below that of the same week in 1887. Since January 1, 1888, the aggregate is 37,636,479, against 34,287,379 for the same time in 1887, an increase of about 3,350,000 tons. Quotations are: Hard White Ash, Lump, $4.50; Broken, $4.15; Egg, $4.40; Stove, $4.65; Chestnut, $4.55; Free-Burning, f.o.b., Broken, $3.95; Egg, $4.30; Stove and Chestnut, $4.65; Pea, $2.75.

Bituminous Coal is more quiet—pool quotations, $3.25, f.o.b. Cumberland shipped 68,700 tons; Clearfield, 60,800; Beech Creek, 40,000 tons. The Berwind-White Mining Company are supposed to be the largest "individual" producer of Coal in the United States. They are supposed to have mined and shipped during 1888 2,500,000 tons of Coal. Referring to the suit brought against the Pennsylvania Railroad Company by R. B. Wigton & Sons, for alleged discrimination, the Pittsburgh *Despatch* says: "Whether the Wigtons can prove to the satisfaction of Judge Allison's bench that their growing neighbor has been getting rebates of from 25¢ to 50¢ ₱ ton is a problem with Coal men. If the Berwind company have been getting the rebates claimed, it means that Coal mined under the auspices of the pool is shipped at a $2.25 or $2.30 rate."

Contracts for supplying Philadelphia with Gas Coal during the year 1889 were awarded last week. The following were the successful bidders:

	Tons.	Price per ton.
Manor Gas Coal Co.	5,000	$3.81
Penn Gas Coal Co.	57,720	3.82
Westmorland Coal Co.	57,720	3.82
Newburgh Orrel Coal and Coke Co.	15,000	3 76
James Boyce	15,000	3.76
Despard Coal Co.	10,000	3.76
J. & W. Wood	10,000	3.76
Chesapeake & Ohio (C. B. Orcott)	25,000	3.80
Total	195,440	

The amount called for was 210,000 tons. The prices paid for 1888 were $3.79, $3.83 and $3.84.

The Wheeling, Lake Erie and Pittsburgh Coal Company has been organized, with James M. Hain as president. Capital, $1,000,000 in bonds and $1,000,000 in stock. This company has bought all the valuable Coal lands along the Wheeling and Lake Erie extension, and will proceed at once to open the mines.

The Reading has begun construction of a three-mile link between its road and the Lehigh Valley tracks at Silverbrook, Pa. The branch will open up a new Coal field heretofore monopolized by Lehigh Valley.

At a meeting of the Coke workers of the Connellsville district on Saturday, it was decided to demand an advance of 6¼ % at once. The advance is based on $1.35 per ton for coke, which is 10¢ above the present selling price

Imports.

The imports of Iron and Steel, Hardware, &c., at this port from December 21 to December 27, inclusive, and from January 1 to December 27, inclusive, were as follows:

Iron and Steel.

	Dec. 21. to Dec. 27. Tons.	Jan. 1 to Dec. 27 Tons.
Pig Iron: G. W. Stetson & Co.	200	15,050
Crocker Brothers	140	15,724
Spiegelcisen: Naylor & Co.	600	12,632
J. A. Jansen	413	12,485
Crocker Bros.	141	12,724
Steel: Thos. Prosser & Son	31	306
Pierson & Co	22	156
W. F. Wagner	6	1,518
F. S. Pilditch	5	525½
Chas. Hugill	5	315½
Knauth, Nachod & Kuhne	3	3
Steel Rods: R. H. Wolff & Co.	51	4,237
Steel Sheets: Lalance & G. Mfg. Company	12	538
R. Crooks & Co.	9	375
Steel Plates: Williams & W.	10	10
Steel Hoops: A. R. Whitney & Co.	429	2,819
Ogden & Wallace	10	44
Iron: Thos. Prosser & Son	9	10
E. G. Jacobus	4	33
Rivet Rods: A. Milne & Co.	51	361
Old Iron Rails: C. L. Perkins.	101	101
Iron Wheels: R. F. Downing & Co.	9	65

Tin Plates.

	Boxes.	Boxes.
Phelps, Dodge & Co.	16,781	572,383
Pratt Mfg. Co.	14,301	175,095
A. A. Thomsen & Co.	6,444	170,671
Dickerson, Van Dusen & Co.	3,897	285,309
T. B. Coddington & Co.	3,207	178,296
Bruce & Cook	2,938	105,402
G. B. Morewood & Co.	2,822	51,584
N. L. Cort & Co.	1,052	115,447
H. R. DeMilt & Co.	847	18,684
R. Crooks & Co.	412	67,642
Merchant & Co.	272	25,353
Hy. Whittemore & Co.	211	47,627
Central Stamping Company	210	38,435

Metals.

	Pounds.	Pounds.
Tin: Phelps, Dodge & Co.	336,257	4,086,082
Bidwell & French	112,265	679,962
Naylor & Co.	112,068	3,831,690
F. Naumann	2,240	5,240
Lead: Hendricks Bros.	21,036	65,888

Hardware, Machinery, &c.

Boker, Hermann & Co., Mdse., cs., 23; Iron Chains, cks., 17
Clark, G. A. & Bros., Mach'y, cs., 6
Field, Alfred & Co, Mdse., cs., 29; Hdw., pkgs., 55; Anvils, 115
Foley, Edward, Mch'y, pkgs., 21
Graef Cutlery Co., Cutlery, cs., 19
Hartley & Graham, Mach'y, cse., 1
Marshall & Co, Mach'y, cs., 3
Morse Machine Company, Mdse., cs., 2
Sacks & Richmond, Nails, cks., 12
Sheldon, G. W. & Co, Mach'y, pkgs., 34
Wiebusch & Hilger, Lim., Mdse., 15; Anvils, 293; Hdw., cs., 8
Order: Mach'y, cs., 5; ditto, pkgs., 489; Steel Bands, Rollers and Forgings, 120

Exports of Metals.

	Dec. 21. to Dec. 27. Pounds.	Jan. 1. to Dec. 27. Pounds.
Copper: J. Abbott & Co.	.....	13,252,107
Lewisohn Bros.	.....	4,041,522
F. A. Lomal	.....	2,581,293
American Metal Company	.....	6,578,008
G. H. Nichols	.....	223,939
J. Bruce Ismay	.....	112,000
S. Mendel	.....	560,000
Ledoux & Co.	.....	110,276
Muller, Schall & Co.	.....	430,000
Copper Queen Con. M. Company	.....	224,034
J. Kennedy, Tod & Co.	.....	112,026
H. Becker & Co.	.....	1,250
Orford C. & S. Rfg. Company	112,000	561,881
Robt. M. Thompson	.....	125,000
Thos. J. Pope, Sons & Co.	.....	1,451,130
Williams & Terhune	.....	99,320
J. Parsons & Co.	.....	420,000
Naylor & Co.	.....	448,809
Jas. E. Pope, Jr.	.....	167,500
Bridgeport Copper Company	.....	112,000
C. Heroid	.....	250,000
Phelps Bros.	.....	6,350
Burgess & Co.	.....	51,840
R. W. Jones	.....	189,984
Ladenburg, Thalmann & Co.	.....	229,371
W. H. Crossman & Bro.	.....	4,000
R. Crooks & Co.	.....	1,000
Copper Matte: Williams & Terhune	.....	38,339,036
Lewisohn Bros.	.....	3,021,610
American Metal Company	.....	5,089,130
J. Abbott & Co.	230,709	682,892
C. Ledoux & Co.	.....	939,800
F. W. J. Hurst	.....	184,288
G. H. Nichols	.....	722,777
H. T. Nichols & Co.	.....	180,995
Kunhardt & Co.	.....	41,652

Metal Market.

Copper.—London to-day sends futures of Chili Bars and G. M. B. unaltered, £78, and Best Selected lower, £80. In our own market nothing to speak of occurred, and the quotation for Lake on the spot remains nominally 17½¢. From January 1 to December 18 the import of American Copper into Liverpool and Swansea was 23,677 tons Fine, against 15,561 tons the same time in 1887. The visible supply in England and France on January 1, 1889 was 104,035 tons, against 97,940 on December 1, 1888. The Chili charters in December were 2900 tons, against 3400 tons in November; the total supply for England and France during December was 11,400 tons, against 9750 in November, of which American, respectively, 2600 and 1900, and the deliveries in England and France in December were 5200 tons, against 5850 in November.

Tin.—On Thursday of last week the London quotation was £98. 5/ for spot Straits; on the 31st ult. it was £100. 2/6, and this morning it is £99. Futures had improved from £99. 5/ to £101, and they are now £99. 15/. In our own market a sale was made last week of 10 tons, prompt shipment, at 22.20¢, and of 10 tons, ditto, at 22.25¢, closing on Saturday at 22.05¢, spot, and 22¼¢ March. Since then the nominal spot quotation is 22¢, the market closing dull and weak. *Tin Plates.*—We have again had a very quiet week, limited to a small jobbing demand for immediate wants. The business in futures has also been very light, owing to the firm position assumed by makers, who say that at the present prices of Steel Bars and Pig Tin they cannot afford to come down to buyers' views. One or the other must, however, give way soon, as the business will have to be put under way to meet spring requirements. Liverpool cables 13/ @ 13/3 for Cokes. We quote, large lines, ℔ box: Siemens-Martin Steel, Charcoal Finish, $4.75 @ $5.50; Coke Finish, $4.65 @ $4.70; Ternes $4.12½ @ $4.25; Coke Tins, $4.22½ @ $4.30, and Wasters, $4.12½ @ $4.15.

Lead.—Some 400 tons Common Domestic were sold since our last report in the open market at 3.85¢, which is also the closing quotation; the market winds up quiet, but strong. At St. Louis and Chicago the quotation is 3.55¢ to 3.60¢. London stood £12. 17/ 6 with soft Spanish on the 31st ult. and is down now to £12. 15/, English Pig declining from £13. 2/6 to £13.

Spelter.—Absolutely nothing has transpired during the week under review; we quote Domestic, common brands, 5¢, and Silesian 5¾¢, both nominally. In London Silesian wound up at £18. 2/6 on December 31; to-day there is a recovery to £18. 5/.

Antimony—Remains firm at 13¢ Cookson and 11¢ Hallett, the latter being unaltered, £45, in London.

New York Metal Exchange.

The following sales are reported:

THURSDAY, December 27.

100 tons Lead, May	3.95¢

FRIDAY, December 28.

10 tons Tin, prompt shipment	22.20¢
10 tons Tin, prompt shipment	22.25¢
16 tons Lead, January	3.90¢
100 tons Lead, March	3.90¢
16 tons Lead, June	3.95¢

MONDAY, December 31.

10 tons Tin, January	22.20¢
80 tons Lead, spot	3.90¢
50,000 lbs. Lake Copper, March	17.40¢

WEDNESDAY, January 2

10 tons Tin, spot	22.00¢
10 tons Tin, February	22.15¢

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, Jan. 2, 1889.

A better feeling has developed in all branches of the Pig Iron market. Preliminary data from the annual reports of production, consumption, &c., make a favorable exhibit, and deliveries latterly to home consumers also impart some degree of encouragement. Most brands of Scotch Pig have undergone some advance, as have also Middlesboro' Pig and Hematites, the latter being again in brisk demand. Speculation in warrants has shown more animation, the good demand for makers' brands doubtless offsetting, in a measure, the large stock in public stores. Five furnaces have been banked down during the week, for various causes, but there is some movement now in the other direction. In the latter connection it is to be reported that the Glengarnock works are preparing to resume.

There have been no important developments in the Manufactured Iron branch. The general demand is good and prices are firm, with 2/6 advance quoted on Black Sheets. In the Steel trade business continues brisk. Liberal orders are being placed for shipbuilding and railway descriptions and for Billets, while an improved demand is noted for Wire Rods and Crop Ends. The Cockerill Company has booked an order for 3700 tons light Steel Rails for a Roumanian railroad at 154/, and another company has secured one for 24,000 tons for Melbourne. The Wigan Company is laying down a steel plant for the manufacture of Blooms.

Tin Plate makers report a good many inquiries since the Christmas holidays. The volume of business accomplished has been moderate, however, owing, doubtless, to a wide difference between buyers and sellers on prices.

No change is apparent in the demand for Copper. Consumers purchase in the same conservative manner as for some time past; outside speculation is light and the "syndicate" agents have not figured conspicuously in any movement. It is stated that the European holdings of the "syndicate" amount now to fully 110,000 tons. A new scheme is said to be under way involving the creation of an English company, with a captial of £3,000,000. The purpose of this company, according to current report, is the purchase of 80,000 tons of the French syndicate supply and the renewal of contracts with producers for their output for a series of years. Whether this is one of the periodical imaginary projects that come to the surface, or something of a more substantial character, is not clear at this time.

Block Tin has ruled stronger under the stimulus of higher price in the East and livelier speculation. The demand for Lead and Spelter has been more active.

Scotch Pig.—There has been a very fair business and the market is firm, with prices a shade higher on most brands.

No. 1 Coltness,	f.o.b.	Glasgow	51/
No. 1 Summerlee,	"	"	50/6
No. 1 Gartsherrie,	"	"	49/
No. 1 Langloan,	"	"	50/
No. 1 Carnbroe,	"	"	45/
No. 1 Shotts,	"	at Leith	50/
No. 1 Glengarnock,	"	Ardrossan	48/
No. 1 Dalmellington,	"	"	43/6
No. 1 Eglinton,	"	"	42/6

Steamer freights, Glasgow to New York, 4/, Liverpool to New York, 10/.

Cleveland Pig.—With a better general demand the market has shown greater firmness. No. 1 Middlesboro', G. M. B., 36/; No. 3 do:, 33/9.

Bessemer Pig.—The market is quite strong and fairly active. West Coast brands, mixed numbers, 45/, f.o.b. shipping point.

Spiegeleisen.—Prices remain firm and the demand is fairly active. English 20 % quoted 80/, f.o.b. N. W. England shipping point.

Steel Rails.—Business has continued brisk and prices remain very firm. English sections quoted at £3. 19/6 @ £4, and light sections £4. 2/6 @ £4. 10/, f.o.b. at N. W. England shipping point.

Steel Blooms.—A moderate trade in these at previous prices. We quote £3. 18/6 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—There continues to be a good trade at firm prices. Bessemer, 2½ x 2½ inch, £4. 2/6, f.o.b. at N. W. England shipping point.

Steel Slabs.—Demand only fair and prices without important variation. Bessemer, £3. 18/6, f.o.b. at N. W. England shipping point.

Old Rails.—There is no change in the character of the demand, and prices show slight change. Tees quoted at £3. 5/ @ £3. 6/, and Double Heads, £3. 8/ @ £3. 10, c.i.f. New York.

Scrap Iron.—The market has remained quiet, with prices steady. Heavy Wrought quoted at £2. 2/6 @ £2. 5/, f.o.b.

Crop Ends.—A livelier market reported, with prices firm, but no higher. Bessemer quoted £2. 7/6 @ £2. 10/, f.o.b.

Tin Plate.—Makers firm at last week's prices, and the demand fairly active. We quote, f.o.b. Liverpool:

IC Charcoal, Allaway grade	15/3 @ 15/6
IC Bessemer steel, Coke finish	13/6 @ 13/9
IC Siemens " " "	13/9 @ 14/
IC Coke, B. V. grade	13/3 @ 13/6
Charcoal Terne, Dean grade	12/3 @ 12/6

Manufactured Iron.—Prices very firm all through, and business satisfactory in volume. We quote, f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Ord. Marked Bars.	....			@	8	2	6
" Common "	....			@	5	12	6
Staff. Bl'k Sheet, singles	....			@	7	12	6
Welsh Bars (f.o.b. Wales)	5	0	0	@	5	2	6

Tin.—The market has been more active and stronger, with £3 advance scored during the week. Straits quoted to-day at £98. 15/, spot, and £99. 10/ for three months' futures.

Copper.—No material change in the character of business, and only slight variation in prices. Chili Bars, £77. 5/, spot, and £78, three months' futures. Best Selected, £84.

Lead.—More business doing, but very little change in prices. To-day's quotation, £12. 15/ for Soft Spanish.

Spelter.—A good trade and prices very steady at £18. 2/6 @ £18. 5/ for ordinary Silesian.

A manufacturing firm in New York has sent to the Department of Agriculture specimens of a new fiber they are making from the stalk of the cotton plant. The samples received strongly resemble hemp, and seem to be adapted to all the uses that hemp is put to. A few fibers of it twisted together in the hand show remarkable tensile strength, although no exact comparative tests with other fibers have yet been made.

Hardware.

After a year which is generally regarded as prosperous and satisfactory, 1889 opens with a market steady and even in most lines and a condition of things generally which is thought to promise well for future business. Prices in most lines are low, and in some lower than they have ever been, so that manufacturers are disposed to complain of their narrow margins of profit. It is, however, hoped by many that in some lines there will be an improvement in price, and that at any rate in the present condition of business through the country and the increasing export demand for American Hardware, there will be a satisfactory trade.

Cut Nails.

The situation has not undergone any material change except that an increasing number of Eastern manufacturers are discouraged by the long-continued depression, and show a growing indifference as sellers. The output is therefore being curtailed more and more through natural causes. It is estimated that the Cut Nail mills east of the Allegheny Mountains made about 2,250,000 kegs of Cut Nails in 1888 against 2,727,734 kegs in 1887. We continue to quote carload lots on dock $1.80 @ $1.90.

Wire Nails.

The irregular condition of the Wire Nail market, to which we referred in our last issue, has continued and has developed some very low prices. The competition between the manufacturers is very animated and most of them are desirous of securing orders even at figures which are probably below the cost of the production. A good many buyers have already placed their orders, covering considerable quantities of Nails, but at this writing the tone of the market is apparently unchanged, it not having developed strength or showed a reaction from the low prices prevailing The price for carload lots, f.o.b. factory, is $2.25 to $2.30, but it is intimated that these prices are shaded in special cases. Price from store may be named as $2.40 to $2.50 for small lots.

Our Pittsburgh correspondent telegraphs that Carnegie, Phipps & Co., of Pittsburgh, have leased the plant of the Hartman Steel Company, Limited, Beaver Falls, Pa. The plant will be operated by that firm under the name of Carnegie, Phipps & Co., Limited, Beaver Falls Mills. Secretary Wightman, of the Hartman Company, has resigned. The changes noted were to take effect on the 1st inst.

Miscellaneous Prices.

The following discount sheet has been sent out by the Stanley Rule and Level Company, New York, and New Britain Conn., under date January 1, 1889. It applies to the company's illustrated catalogue of January 1, 1888, to which two extra pages, 48½ and 50½, have recently been added and sent out to the Hardware trade. In addition to the discounts named below a discount for cash of 10 per cent. is allowed if the account is paid within 30 days.

	Dis. per cent.
Awl Hafts	45
Awls, Patent Pegging	45
Beader, Stanley's Universal	20
Bevels, Sliding T	60
Bevels, Patent Flush Eureka	30
Bit and Square Level	20
Box Scraper, Adjustable	30
Brad Awls, Handled	30
Clapboard Marker	20
Clapboard Gauge	20
Chalk-lines, Reels and Awls	30
Carpenters' Tool Handles	30
Chisel Gauge	20
Countersinks, Wheeler's Patent	30
Dado, Filletster, Plow, &c., combined	20
Dado, Adjustable	20
Gauges	60
Gauges, with Improved Face-Plate	60
Handles, Brad Awl	30
" Plane	40
" Saw	40
" Screw Driver	50
Hammers, Magnetic	30
" Tack, No. 4	30
" Steak	30
" Upholsterers'	30
Hollows and Rounds, for Plane No. 45	20
Level, Bit and Square	20
Level Glasses	70
Mallets, Hickory	20
" Lignumvitæ	20
Miter Box, Improved	20
" Squares, Improved	30
" Try Squares, Improved	30
Odd-Jobs, Stanley's	20
Plumbs and Levels, Non-Adjustable	70
" " " Patent Adjustable	70
" " " Nicholson's Patent	30
" " " Iron Frame	30
" " " Machinists'	30
Pocket Levels	70
Planes, Bailey's Adjustable, Iron	40
" " " Wood	40
" " " Block	40
Planes, Stanley, Adjustable Iron	40
" " " Wood	40
" " " Block	40
Plane Irons	40

Miscellaneous Planes.

Planes, Beading	20
" Beading, Rabbet and Slitting	20
" Chamfer	20
" Floor	20
" Rabbet	20
" Rabbet and Filletster	20
" Router	20
" Tonguing and Grooving	20
" Victor Adjustable	20
Plow, Filletster, &c., combined	20
Plow and Matching Plane, Bull-Nose	20
Plumb Bobs, Adjustable	30
Roofing Brackets	20
Rules, Boxwood, Stanley's	80
" Ivory, Stanley's	50
" Ivory, Stearn's	50
" Miscellaneous, Stanley's	60
Sash Cord Irons	30
Scratch Awls Handled	30
Screw-Drivers, Varnished Handles	65
Pat. Improved Black Handles	60
Screw-Drivers, No. 86	70
Spoke Shaves, Bailey's	40
Spoke Shave Cutters, Bailey's	40
Trammel Points	30
Trammel Points, for Rules	20
Tool Handles and Tools, Excelsior	30
Try Squares, No. 20	60
" Adjustable, No. 14	30
Try Squares, Iron Handle, No. 12	30
" Inlaid, No. 10	30
" Plumb and Level	30
Try Square and Bevel, Combination	30
Try and Miter Square, Winterbottom's	30
Veneer Scrapers	40

I. S. Spencer's Sons, Guilford, Conn., have appointed S. A. Haines, 90 Chambers street, New York, agent for the sale of their line of Locks, Latches, Door Sheaves, T-Scales, Counter Scales, &c. The following are their net prices for the Locks, Latches, &c., described below:

	Per doz.
Horizontal Rim Lock, brass bolt and key, 3 x 5 inches	$2.00
Horizontal Rim Lock, brass bolt and key, 3½ x 5 inches	2.30
Horizontal Rim Lock, 3 brass bolts and keys, 3½ x 5 inches	2.85
Upright Rim Lock, iron bolt, tinned key, 4 inches	1.25
Upright Rim Lock, brass bolt and key, 4½ inches	2.25

Names and Numbers.			Catalogue page.	Size of Roll. Length. Inches.	Size of Roll. Diameter. Inches.	Retail prices. Each.	Wholesale prices. Per dozen.
Superior Wringers, Iron Frames and Steel Springs. Warranted.	No. 2,	Small Family Size	17	10	1¾	3.50	22.00
	No. 3,	Medium Family Size	17	11	1¾	4.00	26.50
	No. 4,	Large Family Size	17	12	1¾	4.50	31.00
Novelty Wringers, with Curved Clamp. Nos. 22, 33 and 44 have heavier frames and ironwork, as well as thicker Rolls.	No. 2,	Small Family Size	3	10	1¾	4.00	27.00
	No. 3,	Medium Family Size	3	11	1¾	4.50	31.50
	No. 4,	Large Family Size	3	12	1¾	5.00	36.00
	No. 22,	Large Family Size	5	10	2	5.00	36.00
	No. 33,	Ex. Large Family Size	5	11	2	6.00	45.00
	No. 44,	Small Hotel Size	5	12	2	7.00	54.00
Novelty Wringers, with Straight Clamp. Nos. 22½, 33½ and 44½ have heavier frames and ironwork, as well as thicker Rolls.	No. 2½,	Small Family Size	3	10	1¾	4.00	27.00
	No. 3½,	Medium Family Size	3	11	1¾	4.50	31.50
	No. 4½,	Large Family Size	3	12	1¾	5.00	36.00
	No. 22½,	Large Family Size	5	10	2	5.00	36.00
	No. 33½,	Ex. Large Family Size	5	11	2	6.00	45.00
	No. 44½,	Small Hotel Size	5	12	2	7.00	54.00
Novelty Wringers, New Style. See Description Page 18.	No. 10,	Small Family Size	18	10	1¾	4.00	27.00
	No. 11,	Medium Family Size	18	11	1¾	4.50	31.50
	No. 12,	Large Family Size	18	12	1¾	5.00	36.00
Excelsior Wringers, with Folding Bench. Nos. AA, BB and CC have heavier frames and iron work, as well as thicker Rolls.	No. A,	Small Family Size	7	10	1¾	6.00	45.00
	No. B,	Medium Family Size	7	11	1¾	6.50	49.50
	No. C,	Large Family Size	7	12	1¾	7.00	54.00
	No. AA,	Large Family Size	7	10	2	7.00	54.00
	No. BB,	Ex. Large Family Size	7	11	2	8.00	63.00
	No. CC,	Small Hotel Size	7	12	2	9.00	72.00
Excelsior Wringers for Stationary Tubs. Nos. EE, FF and GG have heavier frames and iron work, as well as thicker Rolls.	No. E,	Small Family Size	9	10	1¾	5.00	36.00
	No. F,	Medium Family Size	9	11	1¾	5.50	40.50
	No. G,	Large Family Size	9	12	1¾	6.00	45.00
	No. EE,	Large Family Size	9	10	2	6.00	45.00
	No. FF,	Ex. Large Family Size	9	11	2	7.00	54.00
	No. GG,	Small Hotel Size	9	12	2	8.00	63.00
Excelsior Wringers, Laundry and Factory. Also, for the use of Sugar and Dye Houses. Have large capacity and are strong and durable.	No. H,	Medium Hotel Size	11	12	2½	12.00	99.00
	No. HH,	Large Hotel Size	11	14	2½	15.00	126.00
	No. JJ,	Laundry or Factory	11	16	3	30.00	261.00
	No. KK,	Laundry or Factory	11	18	3½	40.00	351.00
	No. 00,	Laundry or Factory	13	14	4½	50.00	441.00
	No. 000.	Laundry or Factory	13	18	5½	100.00	987.00

3½-inch Rim Latch, iron bolt	1.00
3½-inch Rim Latch, iron bolt and steel bolt	1.10
3½-inch Mortise Lock, brass bolts, nickel key	2.25
4-inch Mortise Lock, brass bolts, metal key	2.85
4½-inch Mortise Lock, brass bolt, metal key	3.25

The Clothes Wringer Association met last week and a new list was adopted, to take effect January 1. This revision of the list was made necessary because since the former one had been adopted certain inequalities were developed on account of the varying cost of the goods, and the list now offered to the trade is designed to represent the market satisfactorily at the present cost of manufacture. It was agreed by the manufacturers that a uniform list should be printed for similar goods, a uniform discount having also been agreed upon. The foregoing is the list of the Bailey Wringing Machine Company, Woonsocket, R. I., which gives the new prices, and from which the discount is $3 per dozen, instead of $2.50, as from the former list, their being also a discount of 2 per cent. for cash in 10 days:

The Putnam Nail Company, Neponset, Mass., have adopted the following new list on their Putnam Horse Shoe Nails. It went into effect January 1, and is subject to a discount of 15 per cent., and 1 per cent. additional for cash in ten days.

No. 12.	10.	9.	8.	7	6.
18c.	18c.	19c.	20c.	21c.	22c.
No. 5.	4.	3.	2.	1.	
		PLATE.			
26c.	50c.	1.00	2.00	3.00	

The following announcement in regard to the prices of Coes' Wrenches is made January 1 by J. C. McCarty & Co., 97 Chambers street, New York, and John H. Graham & Co., 113 Chambers street, New York:

We are instructed by the Coes Wrench Company to quote the following prices—viz., L. Coes & Co.'s Knife Handle Wrench, as well as A. G. Coes & Co.'s make, 55 per cent. discount from list. A special discount of 10 per cent. will be allowed on specified orders for 50 dozen for immediate shipment. Mechanics' Wrenches will continue to rate at 10 per cent. less than the Genuine, and are subject to the same quantity schedule. Terms, 90 days, or 3 per cent. cash, ten days. Parties having purchased the quantity will be entitled to the extra discount on subsequent orders during the balance of the season ending June 30, 1889.

The market for Manila and Sisal Rope remains practically as at our last report, the supply of the raw material being exceedingly limited and the prices firmly maintained. Some small holders who bought in anticipation of an advance are offering Rope at some concessions, but the demand is limited, most of the heavy buyers having anticipated their wants and others buying now only what they are compelled to.

The Tack market shows no important change, and there is some unevenness. A good deal of complaint is made on account of the extent to which light-weight goods are put on the market and some low quotations are to be explained in this way. There is animated competition between many of the manufacturers, resulting in the sending out of very low prices, which are conceded to yield little if any profit. Some of the well-known and conservative houses, however, like A. Field & Sons, American Tack Co., and Dunbar, Hobart & Whidden, refuse to meet the low prices that are current.

The manufacturers of Heavy Hammers and Sledges have been conferring with reference to an advance in prices and the market is regarded as firmer.

The Wire Cloth market is without material change, the best brands having been held pretty firmly, although at a slight decline from last season's prices. Some brands not so well or favorably known have been offered at lower figures. The jobbers have pretty generally placed their contracts, and it rests with them in good part to determine which will prevail next season. The outlook is that there will be a good demand for this line of goods, and the opinion is expressed that the market will be somewhat firmer when the time of delivery is reached. Referring to the quality of Wire Cloth, a manufacturer says:

It should remain with the manufacturers rather than the trade what the quality will be. If the manufacturer allows the trade to make the price we do not think they can reduce the quality fast enough to keep pace with their prices. The time has come when manufacturers must keep up the standard of quality or they must sell their goods at a proportionate reduction in price.

C. J. Kimball & Son, Bennington, N. H., show in their list the line of Drawing Knives, Cutlery and Screw Drivers, of which they are manufacturers. We are advised that their prices are as follows:

Drawing Knives,	discount,	10 and 5 per cent.
Cutlery,	"	20 to 25 "
Screw Drivers,	"	20 to 25 "

Trade.

From Louisville, Ky., we have the following advices under date December 29:

The Hardware Trade of Louisville, Ky., has experienced the usual holiday lull. All salesmen have been in for a week, and are now busily preparing fresh samples for long trips. The past fall's business has been about the largest in the history of our city, and very satisfactory, on the whole, which status has stimulated the dealers to renewed energy. Low prices from manufacturers have caused the jobbers to purchase heavily, and they are distributing the goods into new territory in order to prevent overcrowded stocks, but there is no doubt that dealers, as well as manufacturers, are running on too close a margin, but they feel in a measure safe, as the general condition of the country is prosperous.

The anomaly continues of an enormous and strong consumptive demand on the one hand, and continued low prices and breaks from the factories on the other; this proves what a wonderful country we have in the South and West, which is fast being opened up to trade by new lines and extensions of the railroads. Prices generally have remained steady during the week, but some further concessions are looked for from the mills if Pig Iron does not stiffen up soon. This prime factor is watched by all classes of business, and is looked on as the barometer of trade.

Tendencies in Trade.

From a well-known wholesale hardware house in Ohio we have received the following interesting communication which relates to the question which has been discussed at some length by manufacturers and retailers as to the present tendency of trade as regards direct dealings between the manufacturers and the retail trade. We take especial pleasure in laying this communication before our readers as it is a clear statement of the question as seen from the jobbers' standpoint:

We have read with much interest the correspondence appearing in your paper during the last few months bearing upon the practice of the retail trade of the country in placing their orders. We are gratified to notice that the communications from retail dealers in our own immediate vicinity seem to express almost unanimously the opinion that their interests are best served by giving their business to a jobber, which we believe to be the proper view of the matter. We should like to submit three propositions as expressing our opinions and make a few remarks upon each:

First, The jobber is an essential to the retail dealer.

2d. The jobbers are compelled to submit to unfair competition in many instances; and

3d. The retail dealer can purchase his stock as a whole to better advantage from the jobber than by distributing his order to a number of manufacturers.

We must preface anything we say with the qualification that it applies only to ourselves and our practices, as we are not sufficiently familiar with the methods of our brother jobbers to speak for them, nor indeed have we any right to.

Our first proposition seems so plain that we hardly think it necessary to remark upon it further than to say that it is proven by the correspondence already published from both retail dealers and manufacturers.

The second proposition requires some explanation. In it we refer particularly to two matters: The competition on the part of manufacturers who labor under the delusion that they can market their goods direct to the trade at a price as low as they are willing or able to make to the jobber. These manufacturers, as a rule, are only short lived, but, unfortunately, for each one that dies another is born. From them the retailer usually secures the class of goods commonly known as "shopkeepers." The other unfair competitors are the manufacturers who desire to sell to the jobber, and after having fully stocked him to go out and sell to his customers. We find this class of manufacturers offering to some retail dealers their quantity prices, and at the same time saying to them that they will make them the same price for such goods as they may require. They make sales in some instances, but in the majority of cases the only effect is to make a price at which the jobbers must sell. This practice is a growing evil, and the natural result is that buyers who are entitled to the lowest prices that can be made by jobbers are enjoying no better prices than those made to dealers who buy only a fraction of the quantities that they do. It is an accepted law of trade that the quantity should, to an extent, govern the price, and it is not right that dealers who buy one-twelfth of a gross should be entitled to as low prices as those who purchase in lots of one gross at a time.

Our third proposition is a broad statement which we must substantiate by facts. It is universally acknowledged that competition among jobbers is very keen, and it must therefore follow that prices are as low as they can afford to make, paying their expenses and securing a reasonable profit for themselves. We believe them to be lower, taking a miscellaneous invoice of, say, $500, than the same goods can be bought for at the factories in the same quantities; we believe them to be as low as the same goods can be bought for at the factories in quantities, say, six times as great. We believe it so firmly that we are willing to substantiate the statement to any one who cares to try the experiment.

If our statement of the case is correct, then the truth of our third proposition is apparent, for the items of freight and express charges from 25 to 30 different factories would be found to add at least 5 per cent. to the cost of the goods.

In sending his orders to the jobber the dealer has the advantages of receiving his goods promptly; of receiving them in one lot at a minimum cost for freight; of conducting his business with a comparatively small stock, thus avoiding over-stocks and consequent financial embarrassment. The proper assortment of a retail stock in styles and quantities is just as essential a feature to success as in buying at lowest possible prices. We contend that the two objects can best be accomplished by judicious purchases from the jobber, and think that a little reflection and experimenting on the part of some of our correspondents who now think otherwise may prove to them that they are wrong.

For ourselves, we feel that our reputation with those who are now dealing with us is sufficiently established for fair dealing and low prices to warrant us in referring to them for the truth of whatever we have stated. We feel that we have a mission in the Hardware world, and are entitled to a living from it, and shall continue to use all honest endeavors to obtain it.

Referring to the manner of marketing their goods, a manufacturer in Minnesota writes as follows:

The jobbers were not inclined to take hold of our line very heartily, and wanted all the profits, so we concluded to introduce our goods at least to the retail trade. We are willing to sell to jobbers, but make no special effort to do so. We are inclined to think trade direct between the manufacturer and retailer is increasing, though we should prefer to deal with the jobber alone, as being less troublesome. One reason for manufacturers' inclination to deal directly with the retailer probably is that jobbers cut and make all sorts of prices, so that the retailer will not buy at all, because he has bought cheaper at some time, or has heard of those who have.

The following communication is from a well-known manufacturer "who has visited both the jobber and the retailer,"

and relates to the same question as seen from another point of view:

We think there is an increased tendency on the part of retail Hardwaremen to purchase direct from manufacturers, more especially of goods that are bulky and expensive to carry in stock. Each year finds more manufacturers on the road selling their products direct to the retail dealer or the consumer. The jobber has been arbitrary in the sale of certain makes of goods to the exclusion of all others, and has forced other manufacturers to go direct to the smaller trade. Over-poroduction, and only a home market, compels all manufacturers to "hustle" for whatever trade they can get, either large or small. No matter how good an article a manufacturer has he can't get it recognized by a jobber until he has created a demand for it in the retail trade, then, if a demand is created, the jobber is willing to take hold and sell oftentimes at the manufacturers' prices, and want an extra per cent. or commission for so doing. This is one reason why manufacturers want to sell direct, for he not only saves commissions, extra per cents., &c., but he gains a recognition from the retail trade he would'nt get through a jobber.

Items.

The Lawrence Curry Comb Company, 204 to 210 East Forty-third street, New York, are issuing their 1889 catalogue, which represents the large and important line of Curry Combs which they are manufacturing, including their most recent additions. Their Upright and Angular Boring Machines are also illustrated, attention being called to the advantages possessed by them. In regard to their Curry Combs, they call special attention to those which are made of steel.

J. W. McDonald, Cheboygan, Mich., issues a circular describing McDonald's Patent Improved Saw Tool for use in setting Cross-Cut Saws. He refers to the favor with which this tool has been received by the trade and users of saws, as evidenced by the rapidly increasing demand. He states that it has been much improved since last season and alludes to it as especially practical and an efficient device for the purpose. Full description is given with directions for its use.

E. C. Stearns & Co., Syracuse, N. Y., issue a neat card leaflet of unique design, in which their Stuart's Window Screen Frame is represented on the first page, a detailed statement of the extent to which the manufacture of this line has reached being given within.

As will be observed by the announcement of C. F. Guyon & Co., 99 Reade St., New York, in their advertisement on page 84 they are carrying a complete line of Bronzed Iron and Bronzed Metal goods, which are referred to as entirely new productions and of exceptional quality. The detailed information in regard to this new departure will be of interest. They advise us that they will shortly publish a new catalogue embracing the entire line, which will also include all the new goods made by their several factories since the date of their last catalogue.

The E. C. Meacham Arms Company, St. Louis, Mo., under date December 21, issue their price current No. 395, which is occupied principally in the display of Breech-Loaders, Winchester Repeating Arms and Revolvers being also represented. The last page is devoted to Skates. The circular is accompanied by a key to the quotations which are given in cipher.

George N. Pierce & Company, Buffalo, N. Y., have issued their 1889 Catalogue, which represents their full line of goods, including Refrigerators in both pine and hard wood, Bird Cages, japanned and brass, and Tricycles, of which a large assortment is made for the use of girls and misses. It is to be noticed that several new patterns have recently been added in different departments, and a very complete line of goods is thus offered to the trade. The business was established in 1865, since which time it has been growing to its present dimensions.

The Freeman Wire Company, St. Louis, Mo., report a large demand for the season, and attribute it to the unusually mild weather. They refer to the past month as having been a busy one in all their departments.

For more than half a century Logan, Gregg & Co., Pittsburgh, Pa., have given their employees an annual banquet, and on the 29th ult. the 56th of these entertainments was given. Heretofore they have been held at the house of some member of the firm, but with the increase in the number of employees it has been found that no ordinary residence would comfortably accommodate them all, and on this occasion the families of the employees were also invited. The banquet was accordingly given in the Cyclorama dining hall and reception room, part of the entertainment of the evening being the viewing of the battle of Gettysburg. After the banquet, the excellence of which is referred to, there were other exercises, which are referred to as follows by the Pittsburgh *Post*:

First came the historian, Mr. Bruce Kountz, collector and assistant bookkeeper, who told of all that had happened during the year that had passed. He wound up in a blaze of glory with a description of stock taking, which occurs in December, and the close of which they were celebrating. He had been ably assisted in collecting data by the secretary, Miss Fanny Barndollar, the firm's efficient typewriter.

James H. Bissell, the colored gentleman who occupies the position of order clerk in the store, was the orator of the occasion, and sustained his part nobly. His subject was "Hardware Stores." The first establishment of the kind, he claimed, must have been at Jerusalem when Solomon built the temple. He said, however, that they never flourished luxuriantly in China, because these people had their own strange devices for putting houses together. Some one asked Mr. Bissell if he had ever heard where George Washington got his little hatchet. The sable orator promptly replied that the records showed the hatchet was purchased from Logan, Gregg & Co.

No small part of the entertainment was contributed by Mr. S. H. Lloyd, the bookkeeper, who had charge of the music. At the election which followed he was re-elected musician, and Miss Barndollar was again made secretary. Samuel Davis, bill clerk, was elected historian, and besides Mr. Bissell, who was unanimously re-elected, George McKenzie was chosen as next year's orator.

The following notice is issued to the trade under date of December 31, 1888:

The partnership heretofore existing between the undersigned as Merchant & Co., at 517 Arch street, Philadelphia, Pa., 9 Burling Slip, New York, N. Y., 202 Lake street, Chicago, Ill., 1 Whittington avenue, London, England, having this day expired by limitation, Barthold Bernheim now retiring, the business of Merchant & Co. will hereafter be conducted by Clarke Merchant and Henry W. Merchant, and the affairs of the late firm will be settled by them.

A Nelson, formerly conducting business under the style Salem Nail Company, 295 Pearl street, New York, has recently died, and the business will be carried on by O. Nelson at the same location.

C. R. Denckla, of the Heaton & Denckla Hardware Company, Philadelphia, Pa., a well-known Hardware merchant, of that city, died on the 18th ult.

We have received from the Chicago branch of the Kilmer Mfg. Company, of Newburg, N. Y., one of their calendars for 1889. It is handsomely lithographed in colors, and is intended to be hung on the wall, being bound with a metal strip at the top and bottom and backed with muslin. A table printed on the calendar shows the annual growth of the company's business since 1876, in which year they made 120,000 bale ties. The number has increased rapidly from year to year, until their production for 1888 is put at 59,739,000 ties. An accompanying circular gives a history of the operations of the establishment, which has now grown to very large proportions. It is interesting to note that previous to embarking in this business the members of the firm were farmers in Schoharie County, N. Y., with little or no experience in manufacturing. Their bale ties have a very wide use for baling hay, straw, &c., and they also make ornamental fencing.

The Stanley Rule and Level Company claim that the vexed question whether eight hours is a day's work can be settled sooner by a careful selection of tools with which to do the work than by waiting for legislation on the subject. Their full-page advertisement in another part of this paper offers plenty of illustrations in support of this theory.

W. D. Gold, 1920 South Twelfth street, Philadelphia, Pa., is calling attention to his Smoothing and Polishing Iron Combined. The illustrations given of this article indicate its special features and utility.

The Red Jacket Pump Company, Davenport, Iowa, issue a striking colored lithograph, calling attention to their Red Jacket Adjustable Force Pump and the Lafferty Patent Chain Pumps, with illustrations showing the special features and uses of these goods. The catalogue of the company gives a detailed description of their manufactures, with directions for their use.

The 1889 catalogue of the Moore Mfg. and Foundry Company, of Milwaukee, Wis., illustrates in good style their line of Hangers, Vises, Tackle Blocks, Hay Fork Pulleys, Differential Pulley Blocks, Hand Hoists, &c. In connection with a reference to the removal of their business from Chicago to Milwaukee last July they state that their new plant has been erected with a special view to the manufacture of the lines of specialties shown in their catalogue, calling attention to their factory as well eqipped for making light and medium Gray Iron Castings, with ample facilities for japanning and forging and for light machine work.

The Rockford Bit Company, Kokomo, Ind., issue a large-paged pamphlet describing their Wood-Boring Tools, including a large variety of Bits, together with Molding, Carving and Dovetailing Cutters, &c., Dado Heads, Hollow Augers and other Tools.

The St. Nicholas Mfg. Coompany, H. B. Owsley and H. Owsley, proprietors, 784–794 Madison street, Chicago, Ill., issue a catalogue representing the interesting line of Hand Sleighs, Desks, Rocking Horses, Express Wagons, Perambulators, Velocipedes, &c., which they manufacture.

E. Blair, Bucyrus, Ohio, issues striking and entertaining colored lithographs, in which the pictorial part is utilized to call attention to his line of Hog Rings and Ringers. In a circular to the jobbing trade he states that this year he will have no agents, but solicits orders by mail.

The National Horse Nail Company, Vergennes, Vt., have issued their attractive calendar for 1889. In connection with the pictorial display they give full-sized cuts of the different sizes of Horse Nails, with both short and regular heads.

The Weir Plow Company, Monmouth, Ill., have issued a new catalogue very tastefully printed with exceptionally fine illustrations, in which they represent their line of Plows, Cultivators, Harrows and other Agricultural Implements and Machines. Among the new goods we observe the Weir Tongueless Riding or Walking Three-Wheeled Gang Plow. The company also send out a smaller pamphlet, describing some of their leading Plows, Harrows, &c., with blank pages for mem-

orandum. The company have branch houses at Kansas City, Mo., Dallas, Tex., and Council Bluffs, Iowa.

S. L. Allen & Co., 127 and 129 Catherine street, Philadelphia, Pa., have issued their 1889 Implement catalogue, describing the Planet Junior and Fire Fly Farm and Garden Implements, of which full descriptions are given, with abundant illustrations showing their use.

C. F. Guyon & Co., 99 Reade street, New York, are calling attention to their Nonpareil Sidewalk Ice Chisels, which they refer to as manufactured from the best English Steel. This Ice Chisel is of a heavy pattern and handled, and they allude especially to the low prices at which it is offered

Traveling Men's Association.

The Northwestern Traveling Men's Association held its thirteenth annual meeting in Washington Hal', National Union Building, Chicago, on the 28th ult. The attendance was unusally large, and nearly every State north of the Ohio River was represented. J. C. Miller presided and C. H. Hinman acted as secretary. The session was opened by the address of the president. In the course of his remarks he referred to the record of the association. During the past year the membership had decreased 30, which was due to the unusually large death rate. The number of deaths for the past year was 35, against 25 for the year previous. He recommended that the association change its mode of assessment. Instead of assessing whenever a death occurred, he thought it would be better to fix upon a regular period, say every 60 days. In conclusion, he hoped the members would bear in mind that all differences between the members at this meeting were simply differences as to the mode of helping the association and advancing its interests.

The report of Secretary and Treasurer Hinman followed the executive's address. According to his report $177,000 had been collected in 21 assessments of $2 each, and one expense assessment of $1. Of this money $155,000 was paid out to 31 widows and heirs of deceased members, and $9000 to expense, leaving a balance of $12,000, of which $2000 belonged to the expense fund and $10,000 to the mortuary fund. The average age of the members of the association was 40.17 years. The membership last year was 3909, of which number 171 had been admitted since the opening of the year. The number of deaths was 35, and delinquents dropped from the roll numbered 175, leaving 3870 members in the association at present.

C. H. Crossette, B. C. Prentice and M. A. Scovell, composing the Financial Committee, stated that they had gone over the books of the secretary and treasurer from December 24, 1887, to December 24, 1888, and that they were correct. The discussion of proposed amendments to the constitution occupied the remainder of the morning's session. The principal speech was that of T. S. Quincy, who advocated an amendment to the constitution to place the association on a graded assessment basis, to assess members according to their age. He also favored the payment of a commission to members for all applications for membership which they forwarded. The afternoon session convened at two o'clock. A discussion in regard to the election of officers was the first matter of interest after the meeting was called to order. The vote was then taken by ballot, the result to be announced by the Election Committee at the evening session.

A motion to present President J. C. Miller with $1000 for the able manner in which he has fulfilled the duties of his office caused a spirited discussion. Some opposed paying anything, on the ground that it was unlawful, and that it would cause a scramble for the office if a monetary consideration was given. Others wanted the sum reduced to $500. When it came to a vote, however, the $500 party prevailed, and that sum was ordered paid. At the evening session the result of the election was announced as follows: J. C. Miller, president; C. H. Hinman, secretary and treasurer; W. M. Haskell, O. D. Frary, George Reed, D. K. Clink and F. F. Haigh, directors; vice-presidents—Illinois, W. H. Cribben; Wisconsin, John Throne; Indiana, J. B. Heywood; Ohio, Henry Rindskoff; Kentucky, N. M. Uri; Minnesota, D. R. Hevener; Michigan, Thomas Macleod; Iowa, C. M. Hinsdale; Missouri, M. C. Wetmore; Dakota, J. R. Robertson; New York, C. B. Howe; Colorado, William M. Gamble; Nebraska, M. A. Newmark; Kansas, D. E. Good; California, John Newberry; Montana, W. G. Paine. But one of the ten proposed amendments to the constitution was adopted, and that was the amendment of Section 2 in Article V, which now reads:

The Board of Directors may order an assessment of not over $1 upon each member of the association for expenses, when needed.

A number of lively speeches were indulged in by enthusiastic members, relative to improving on the gathering next year. The general opinion seemed to be that the business of the association could be much more expeditiously disposed of, and much more satisfactorily, if the annual meeting were changed to a delegate body. It was agreed that an amendment to the constitution making such a change would be offered at the next meeting. The association then adjourned to meet in Chicago, December 27, 1889.

Business Rules.

We have the pleasure of laying before our readers the following rules and regulations which have been adopted by a well-known wholesale Hardware house, by whom they are issued in the form of a convenient and well printed pamphlet. It will be observed that they are carefully compiled, and enter into a good many details which will doubtless be suggestive:

RULES AND REGULATIONS GOVERNING THE HARDWARE BUSINESS OF DUDLEY BROTHERS & LIPSCOMB, NASHVILLE, TENN.

BOOKKEEPERS.—ARTICLE I.

Section 1. Bookkeepers shall balance cash every day, and keep a book for that purpose, showing each day's balance, and they shall be prepared at any time to show that the cash on hand equals the balance the books call for. If there is a shortage they are liable for the amount of said shortage.

Sec. 2. Bookkeepers shall be liable for all counterfeit money that comes into the house, except what comes through the front cash drawer or city sales.

Sec. 3. Bookkeepers shall be liable for money receipted for by them and not credited to the payer; and they shall be liable for any other mistakes that may occur through their negligence.

Sec. 4. Bookkeepers shall be required to have an expense book from each and every traveling salesman before making settlement with him.

Sec. 5. Said expense book shall be filled out as provided for in Art. XIX, Secs. 7 and 8.

Sec. 6. Bookkeepers settling with traveling salesmen without the necessary collection and expense books, filled out as provided for in Art. XIX, Secs. 7 and 8, shall be guilty of a violation of rules as much so as the traveling salesman.

Sec. 7. Bookkeepers shall not be liable for money accepted by traveling salesmen, to be paid to other parties, except as provided for in Art. IV, Sec. 2.

Sec. 8. Bookkeepers shall be required to keep the collection and expense books of the traveling salesmen on file, and these books shall be the bookkeepers' sole and positive authority for all the entries made on the traveling accounts of the salesmen.

Sec. 9. Bookkeepers shall furnish traveling salesmen with statements, as provided for in Art. XIX, Sec. 11.

Sec. 10. Bookkeepers shall furnish the other employees of the house with information, as provided for in Art. VIII, Sec. 16.

Sec. 11. Bookkeepers shall pay employees their salary, as provided for in Art. VIII, Sec. 20.

Sec. 12. Bookkeepers shall not all leave the office at the same time. During business hours there shall always be at least one of them in the office.

BILL CLERK.—ARTICLE II.

Section 1. Bill clerks, in making charges on the country sales books, shall say who sold the bill, and whether it is an order given to a traveling salesman or if it is a bill sold in the house. If it is an order from the customer by mail, bill clerks shall say order by mail.

Sec. 2. In making charges on the city sales books the bill clerk shall give the salesman's name, and give post-office address of all new customers. If the order come by telephone, bill clerks must say so, and give name of the person who telephoned the order.

Sec. 3. Every charge offered to the bill clerk for entry on the sales books shall show who called the goods, who checked them, who packed them, and by whose authority the order is filled. No order or bill shall be entered on the sales books without this.

Sec. 4. If the bill clerk charges a man or firm merely "to merchandise," without giving the items, the bill clerk is security for the payment of the bill.

Sec. 5. It is the duty of the bill clerk to ask for the necessary information, and if such information is withheld or delayed the bill clerk shall not enter the bill.

Sec. 6. The failure of the bill clerks to adhere to these requirements shall make them liable for any loss that may ensue.

CITY BILLS.—ARTICLE III.

Section 1. City bills shall be marked "O K" by the person making the purchase, at the time the purchase is made, and said bill shall then be put on the city bill file.

Sec. 2. No bill shall be put on said file upon which an alteration or deduction is made, but when the bill needs correction a corrected bill shall be obtained, marked "O K," and the old bill shall be destroyed, and the corrected bill put on said file.

COLLECTIONS.—ARTICLE IV.

Section 1. If a traveling salesman collect money on the road and enter said collection in his collection and expense book, and said collection be not credited to the payer, said collection shall be charged to the bookkeeper making the settlement with said traveling salesman: but if said collection does not appear in said traveling salesman's collection and expense book, said collection shall be charged to the traveling salesman.

Sec. 2. Money accepted by traveling salesmen from their customers, to be paid to other parties must be entered in their collection and expense book, with full instructions as to whom and for whom said money is to be paid.

CONVERSATIONS.—ARTICLE V.

Section 1. Conversations with partners or employees in the house or over the telephone, except upon business, shall not exceed five minutes. Conversations with bookkeepers or bill clerks, except on business, interferes materially with their work and shall not be allowed.

CREDIT CLERKS.—ARTICLE VI.

Section 1. The credit clerk shall keep a true record of all goods returned, and shall enter them on his credit book, giving the date they came in.

Sec. 2. If the goods are returned without authority they are to go on the credit book in a separate place from the authorized credits, and remain as a memorandum until the credit clerk is authorized to enter them for credit.

Sec. 3. When goods are handed to an employee of the house, other than the credit clerk, it shall be the duty of the person receiving such goods to report them at once to the credit clerk.

CUSTOMERS.—ARTICLE VII.

Section 1. Customers shall be treated courteously and with careful and patient attention. Short answers or "smart Alex" replies shall not be made.

Sec. 2. Customers presenting receipts for money not credited to them shall be credited with the amount the receipt calls for, and said amount shall be charged to the person who signed the receipt.

Sec. 3. All orders or bills sold to new customers on credit shall be marked "O K" by a member of the firm or by one of the bookkeepers.

EMPLOYEES.—ARTICLE VIII.

Section 1. Employees shall bear in mind that time misspent by them, or work done to no purpose, is an actual cash loss to the firm. They shall, therefore, be required to work steadily and systematically during business hours.

Sec. 2. Employees shall be required to keep the firm's interests always in view, and to work to that end.

Sec. 3. If any person employed by the firm show a disposition to shirk his general or specified duty, or to consume his time merely with a view of acquiring a nominal right to draw his salary, he shall be declared worthless to the firm and shall be discharged without notice.

Sec. 4. Employees shall be provided with tablets to be used for figuring, writing dray tickets and such like purposes.

Sec. 5. Any and all persons shall be forbidden to use bill heads or other stationery except for legitimate purposes, and any person mutilating order books, cash books, sales books or stationery shall be charged with the same.

Sec. 6. Employees shall bear in mind that they shall complete any order given them to get up, and when the porters are otherwise employed the orders shall not be delayed by waiting for the porters to get out the rough articles.

Sec. 7. Each employee shall feel an interest in the general welfare of the firm, as provided for in Section 2 of this article, and shall not willingly see a loss sustained by the firm, or an article damaged, merely because it is not in the section of stock assigned to him.

Sec. 8. Employees shall have goods for their own use at cost and carriage, but goods sold to friends, or bought by employees for their friends, must be charged regular.

Sec. 9. Employees shall bear in mind that postage stamps are the same as money, and that

it is proper for them to bear the expense of their personal correspondence.

Sec. 10. Mr. —— shall have charge of the entire stock, and he shall be held responsible for the proper care and management of the stock.

Sec. 11. It is the duty of the said —— to assign each employee a certain section of the stock, and each employee will be required to keep his section in good order and condition.

Sec. 12. The failure of an employee to keep his section of stock in good order and condition shall be at once reported by said —— to the firm, and, upon conviction, the employee thus reported shall be dealt with as provided in Section 3 of this article.

Sec. 13. The failure of said —— to report the failure of an employee to keep his section in good order and condition shall make said —— equally liable with the employee.

Sec. 14. All goods taken out of their place and not sold shall be put back by the person who took them out.

Sec. 15. No goods or broken packages shall be left on the running board.

Sec. 16. None of the employees except the bookkeepers shall be allowed behind the railing in the rear office, but they shall ask the bookkeepers for any information they (the employees) may need in relation to the business.

Sec. 17. Employees shall be forbidden to take out of stock any tool, implement or merchandise to be used in the store or loaned out.

Sec. 18. Any employee using merchandise, implement or tool in violation of Sec. 17 of this article shall be charged with what he uses at regular prices.

Sec. 19. If any employee, receiving goods to be credited to a customer, fails to deliver same to the credit clerk, the said employee shall be charged with said goods when customer claims credit for them.

Sec. 20. Employees shall not overdraw their salary, but they shall have the privilege of drawing their money through the month as their convenience suggests. They are requested, however, to make as few demands as possible on the bookkeepers.

Sec. 21. Employees shall not buy goods for their own use and have them charged to the firm.

Sec. 22. Employees will be required to select their wearing apparel with a reasonable regard for the duties they have to perform, so as to avoid changing their dress during business hours.

MAIL.—ARTICLE IX.

Section 1. No mail shall be left or opened in the front office.

Sec. 2. It shall be the duty of the person bringing the mail from the post office, or receiving it from the postman, to take it to the rear office at the time and in the condition he rsceives it, and it shall remain in the rear office, untouched, until it is opened by some one authorized to do so.

MISTAKES.—ARTICLE X.

Section 1. Mistakes reported by mail or otherwise shall be traced to the person who made them, and said person shall correct the mistakes and report them to the bookkeeper.

Sec. 2. If a loss is caused by the mistake said loss shall be charged to the party who made the mistake.

ORDER AND DECORUM.—ARTICLE XI.

Section 1. Order and decorum shall be maintained at all times.

Sec. 2. No boisterous talking, laughing or improper language shall be tolerated at any time.

PACKING. ARTICLE XII.

Section 1. Mr. —— —— shall be furnished with packing tickets, printed so as to show who got out the goods, who they were called by, who they were handled by, who packed them and who shipped them. Said tickets shall contain printed instructions to the purchaser to return said ticket to the firm in all cases where the goods do not check with his invoice.

Sec. 2. It shall be the duty of the person getting up an order to see that a ticket, filled out as specified in Sec. 1 of this article, is placed in the box.

PARTNERS.—ARTICLE XIII.

Section 1. The rules of the house, as far as applicable, shall govern the partners as well as the employees.

PORTERS.—ARTICLE XIV.

Porters shall not be allowed to have company at dinner time, and shall conduct themselves as required by Sec. 2 of Art. XI.

RECEIVING CLERKS.—ARTICLE XV.

Section 1. Receiving clerks shall keep a true record of all goods that come into the house, and shall keep a book for that purpose, known as the receiving book.

Sec. 2. Said Receiving book shall show when the goods came in, what railroad, steamboat or wagon they came by, and the amount of the freight bill.

Sec. 3. Receiving clerks shall check up the invoices on receipt of the goods, and report any shortage, breakage or irregularity as soon as it is detected.

Sec. 4. When there is an invoice that cannot be checked, the receiving clerk shall report the fact at once, and get instructions in relation to said invoice.

Sec. 5. Receiving clerks shall see that the rate of freight charged in the freight bill agrees with the rate in the bill of lading, and shall mark each completed freight bill O K, and attach said completed freight bill to the bill of lading that goes with it.

SALESMEN.—ARTICLE XVI.

Section 1. Salesmen extending credit without authority shall be responsible for the amount.

Sec. 2. The salesmen can avoid the responsibility of trusting customers whose credit is unknown to them by referring such cases to a member of the firm or to the bookkeepers.

Sec. 3. It shall be the duty of the salesmen to give the necessary information to the bill clerk, as required by Art. II, Secs. 1, 3 and 5.

Sec. 4. Salesmen shall furnish the bookkeepers with such information in regard to their customers as the bookkeepers may deem necessary.

Sec. 5. If a salesman hear a report, or come into possession of any facts that will probably affect the credit or solvency of his customer, it shall be the duty of the salesman to advise the bookkeeper at once of such rumor or facts.

SHIPPING.—ARTICLE XVII.

Section 1. There shall be a book known as the shipping book, and it shall be the duty of the man who handles the goods in the bill to enter on said shipping book the buyer's name and his shipping directions, and his calls at other houses, if any; and to state on said book the number of cases and packages, giving their weights, and to give a description of such articles as are not packed in boxes or put in packages—in other words, the man who handles the order must enter it on the shipping book in such manner that the bill of lading can be made from the shipping book, and not from memory or from "the pile of goods."

Sec. 2. If the goods go by wagon the wagoner must sign said shipping book the same as he would sign the wagon receipt book.

Sec. 3. It shall be the duty of any person receiving one or more packages to be shipped with our goods to enter said packages on said shipping book.

Sec. 4. Said shipping book shall state who the package or packages came from, and shall show that they were packed with our goods.

SHIPPING CLERK.—ARTICLE XVIII.

Section 1. Shipping clerks shall send a bill of lading along with the invoice of each shipment.

Sec. 2. When shipping a number of articles tied together, or made into a bundle, shipping clerk shall state the number of articles in the bundle.

TRAVELING SALESMEN.—ARTICLE XIX.

Section 1. Traveling salesmen shall be furnished with order blanks, and shall write only one order on each blank. All orders shall contain full shipping directions, and terms of sale. The orders shall be written plainly and explicitly, and give price of each article.

Sec. 2. Nothing shall be written on the paper containing the order that does not refer exclusively to the order; and no one shall be bound to enter a credit written at the bottom of an order.

Sec. 3. Traveling salesmen shall be furnished with printed blanks to make reports on their customers, and shall be required to send in a report on every new customer they sell. The blanks for this purpose shall be printed in a manner that will leave no doubt as to what is required of the traveling salesman.

Sec. 4. All traveling salesman shall use due diligence to obtain information that will enable them to fill out the statements and questions printed on the blanks, and shall write on the back of the report any other information he can obtain, together with his own opinion of the purchaser's means, character, habits and business capacity.

Sec. 5. All that the traveling salesman has to say in relation to the purchaser's credit or history shall be written either in the face or on the back of the report, and not in his letter to the firm or on the order.

Sec. 6. The traveling salesman's failure to send a report with an order from a new man to be filled on credit shall be taken as evidence that the salesman can find no reason for recommending said new customer for credit, and the order shall not be filled, except upon the salesman's guarantee.

Sec. 7. Traveling salesmen shall be furnished with blank books in which to enter all collections and disbursements while on the road, and they shall be required to send said books to the house at the end of each week; said books shall say where to reach the salesman by letter.

Sec. 8. All discounts, rebates or allowances of any kind made by the traveling salesmen while on the road shall be entered in said books.

Sec. 9. Traveling salesmen passing customers who owe bills that are due shall be required to report failure to collect as promptly as they would a collection, and to report reasons given or promises made.

Sec. 10. Traveling salesmen shall keep the house advised as to the propriety of bringing suit against or of refusing to sell delinquent debtors.

Sec. 11. Traveling salesmen wanting statements of their customers' accounts shall hand the bookkeeper a list giving names of such customers, and write on said list when the statements will be called for. List shall be handed to the bookkeeper in time for him to have them ready at the date they will be called for.

Sec. 12. All traveling salesmen, when not on the road, shall assist in the general work of the house, the same as other employees.

Sec. 13. All traveling salesmen bringing in orders shall copy them on the regular order blanks, and shall, with the proper assistance, get said orders up.

Sec. 14. All traveling salesmen, no matter upon what basis, shall be subject to the rules of the house.

ARTICLE XX.

Section 1. The foregoing rules have been drafted in good faith and due consideration for the rights and privileges of the employees. Therefore a rigid observance of said rules is expected and shall be enforced.

Sargent & Co.,

New York and New Haven, Conn., have issued their discount sheet No. 2 under date January 1, 1889, which applies to their 1888 catalogue. We print below the portion which refers to goods of their own manufacture, which will be interesting as showing the extent of their line, and also their carefully revised quotations. In connection with this discount sheet it is announced that the old cash discount is discontinued and that the goods will now be invoiced at *net prompt cash rates*, which are the equivalent of their former invoice discounts and the cash discount combined. Their invoices will, therefore, in future be subject to no cash discount as heretofore, and it is stated that if payment is not received within 30 days from date they will draw at sight for the amount of the account. The trade will note with unusual interest this change, the 10 per cent. cash discount having been given for many years, so that its discontinuance is an important new departure, which will doubtless receive the approval of the trade.

Their list of Door Knobs, Locks, Escutcheons, &c., is also issued, the discount for which is 55, 10 and 2 per cent. The following are the discounts on the goods contained in the first 858 pages of their catalogue, and, as noted above, the prices given are net:

	Dis., per cent.
Door Bells: Nos. 3½ to 15, 143 to 145, 103½ to 115, 243½ to 245, 203½ to C205E, 2003½ to 2005, 2013½ to 2015, 2143½ to 2145, 2103½ to 2115, 2243½ to Y2245, 2203½ to 2215	60&10
Levers for Door Bells	60&10
Side Bell Pulls	55
House Bells on Carriages	50
Alarm Door Bells	60&10
Door Knockers	70
Check Springs	70
Bell Cranks	60
Mortise Bell Cranks	60
Pulley Bell Cranks	60
No. 20, Narrow Fast Joint Butts	55
No. 20, Broad Fast Joint Butts	60
Loose Joint Butts: Nos. 50, 152, 153, 156, 158, 159, 53, 58	70&10
No. 456, Boston Finish Butts	85
No. Y456, Yeddo Bronzed Butts	80&10
No. 458, Boston Finish Butts	85
No. Y458, Yeddo Bronzed Butts	80&10
No. 462A, Berlin Bronzed Butts	80&10
No. K462A, Tokio Bronzed Butts	80&10
No. Y462A, Yeddo Bronzed Butts	80&10
No. 476, Berlin Bronzed Butts	80&10
No. 875, Bronze Metal	75
No. 896A, M896A, Bronze Metal Butts	70
No. 895A, M895A, Bronze Metal Butts	70
No. C886E Bronze Metal Butts	70&10
No. 1501, Brass Butts	70
No. 1501P, L1501P, Bronze Metal Butts	70
No. 1503, Brass Butts	70
No. 1503P, L1503P, Bronze Metal Butts	70
Loose-Pin Butts, Nos. 42, 43, 142, 143, 146	70&10
Loose-Pin Butts, Nos. 148 and 149	70
No. T435, Tuscan Bronzed Butts	80&10
No. 435, Berlin Bronzed Butts	80&10
No. P137, Copper Plated Butts	80
No. 136, Boston Finish Butts	85
No. Y136, Yeddo Bronzed Butts	80
No. 442A, Berlin Bronzed Butts	80
No. K442A, Tokio; No. Y442A, Yeddo Bronzed Butts	80&10

No. 446A, Berlin Bronzed Butts 80
No. K446A, Tokio; No. Y446A, Yeddo; No. Y33A, Bronzed Butts ..... 80&10
No. T436A, Tuscan Bronzed Butts 80
No. 436A, Berlin Bronzed Butts 80
No. K436A, Tokio, 437A, Berlin, Bronze Metal Butts ..... 70&10
No. 836A, M836A, Bronze Metal Butts 75
No. 834, M834, Bronze Metal Butts ..... 75&10
No. 845A, M845A, Bronze Metal Butts 70
No. C843E, Bronze Metal Butts ..... 70&10
No. 1541, Brass Butts 70
No. 1541P, L1541P, Bronze Metal Butts 70
No. 1543, Brass Butts 70
No. 1543P, L1543P, Bronze Metal Butts 70
Mayer's Hinges ..... 70&10
No. 200, Parliament Butts ..... 70&10
No. 203, 206, Parliament Butts 75
No. 500, 700 Parliament Butts 70
No. 1495A, &c., Parliament Butts 70
No. 2895A, &c., Parliament Butts 70
Parliament Butts 70
Inside Shutter Hinges 70
Inside Shutter Hinges: Nos. 410&411 ..... 65&10
Nos. 810&811 ..... 60&10
No. 415A ..... 65&10
Nos. K415A & Y415A ..... 70&10
Nos. 815A & M815A. Nos. 813P & L813 P ..... 65&10
Nos. 420&820. No. 425A 70
Nos. K425A & Y425A ..... 70&10
Nos. 825A & M825A. Nos. 823P & L823P 70
Inside Shutter Hinges, Loose Pin ..... 65&10
Inside Shutter Hinges, Loose Joint: Berlin Bronzed ..... 65&10
Bronze Metal 70
Loose Pin Surface Butts 70
No. 400, Refrigerator Hinges. No 800 55
Surface Spring Hinges, Single ..... 60&10
Double 66⅔
Surface Spring Hinges, page 281 60
Ratchet Surface Spring Hinges 60
Mortise Spring Hinges 60
Model Spring Hinges 66⅔
Royal Spring Hinges: Japanned 66⅔
Bronze Metal 45
Eclipse Door Springs 55
Eclipse Door Checks 55
Victor Door Springs 60
Champion Door Springs 55
Torrey Door Springs 80
Rubber Door Springs 60
Strap and T Hinges 75
Crate Hinges 75
Hinge Hasps 75
Crate Hasps 75
Galvanized Strap and T Hinges 70
Galvanized Hinge Hasps 70
Trap Door Hinges ..... 60&10
Nos. 160, 162, Plate Hinges 10
No. 88 Hook and Eye Hinges 60
Nos. 98, 168, Hook Hinges 10
Nos. 78, 79, Welded Hook Hinges 60
Rolled Plate Hinges 70
Rolled Blind Hinges 55
Turn Buckles ..... 60&10
Drops and Pins ..... 70&10
Blind Fastenings 60
Blind Hinges, Nos. 1, 3, 5, 11, 13 75
Gate Hinges ..... 60&10
Gate Sockets ..... 60&10
No. 0, Gate Latches 60
No. 65, Gate Latches 45
Rhoad's Gate Latches ..... 60&10
Top Gate Latches ..... 60&10
Upright Gate Latches ..... 60&10
Gate Latches, Nos. 7, 8 and 9 ..... 60&10
Barn Door Rollers ..... 60&10
Barn Door Hangers ..... 60&10
New England Barn Door Hangers 60, 10, 10
Sterling Barn Door Hangers ..... 60&10
Wood Track Barn Door Hangers ..... 60&10
Barn Door Rail ..... 60&10
Barn Door Stays ..... 60&10
Sliding Door Rail, Nos. 135 and 145 ..... 60, 10, 10
Wrought Sliding Door Rail, No. 175 ..... 60&10
Tower Bolts ..... 60&10
Barrel Bolts, page 318 ..... 60&10
Barrel Bolts, page 319 70
Barrel Bolts, whole page, 320 70
Nos. T472A, 472A, Barrel Bolts 60, 10, 10
Nos. 462A, 862A, Barrel Bolts ..... 60&10
Brass Barrel Bolts, page 322 ..... 60&10
Brass Barrel Bolts, page 323 70
Elm City Brass Barrel Bolts ..... 60&10
No. 364, Neck Bolts ..... 60&10
No. 378, Neck Bolts 70
Nos. 303, 304, Neck Bolts (Wrought) 70
Nos. 500½, 320, Neck Bolts ..... 60&10
Nos. 423, 522 ..... 66⅔
Neck Bolts, page 328 ..... 70&10
Spring Bolts ..... 70&10
Shutter Bolts ..... 60&10
Square Bolts 70
No. 300 Square Bolts ..... 60&10
Floor Plates for Square Bolts ..... 60&10
Staples for Square Bolts ..... 60&10
No. 500, Square Bolts 60
Square Bolts, Bronzed 70
Square Bolts, Bronze Metal 66⅔
Bottom Bolts, Bronzed 70
Bottom Bolts, Bronze Metal 66⅔
Square Cased Bolts: Nos. T1402A, 1402 A, Nos. T1404A, 1404A 70
Nos. K1402A, Y1402A ..... 70&10
Nos. 1802A, M1802A ..... 60&10
No. 801, Square Cased Bolts, Nos. 503, 505 60
Nos. 502, 504, Square Cased Bolts ..... 60&10
Foot Bolts: Nos. T1491A to Y1491A 70
Nos. 1891A, M1891A, Nos. 595, 595 P 66⅔
Nos. 390, 391, 392 Foot Bolts 70
Chain Bolts, Nos. 380, 381, 382 70
Extra Heavy Chain Bolts 70
Chain Bolts: Tuscan and Berlin Bronzed, Tokio and Yeddo, Bronze Metal, No. 583, Cast Brass ..... 60&10
Brass Chain Bolts ..... 60&10
Extra Heavy Chain Bolts ..... 65&10
Mortise Door Bolts, page 346 55
" " " " 347 70
Ship Flush Bolts ..... 60&10
Cast Brass Flush Bolts ..... 60&10
Flush Bolts 60
Bronzed Flush Bolts: Tuscan and Berlin ..... 60&10
Tokio and Yeddo 70
Bronzed Flush Bolts, page 358 ..... 60&10
" " " " pages 358, 359 60
Bronze Metal Flush Bolts: Nos. 89 A. M89A ..... 60&10
Nos. C85E, C105E, 105P 60
Bronze Metal Flush Bolts 60
Extension Flush Bolts 60
Mortise Flush Bolts, Bronzed 75
Bronze Metal 70
Nos. C1109E, 2108P, L2108P ..... 60&10
Cupboard Bolts ..... 60&10
Straight Cupboard Bolts ..... 60&10
Brass Flat Bolts ..... 60&10
Door Buttons ..... 60&10
No. 5 Door Buttons, page 375 60
No. 15 Door Buttons 60
Nos. 32, 33, Door Buttons ..... 60&10
Elbow Catches ..... 60&10
Barn Door Elbow Catches ..... 60&10
Cupboard Latches 60
Cupboard Catches, Nos. 6310, 6211, 6411 55
Cupboard Catches, Nos. 6520, 6525 60
Cupboard Catches, Nos. 3230 to 3432 ..... 66⅔
Cupboard or Locker Catches 60
Showcase Catches 60
Brass Cupboard Catches 60
Cupboard Catches, pages 382-385 ..... 60&10
Cupboard Catches: Nos. 262, 267 ..... 66⅔
Nos. 272 to 479 ..... 60&10
Cupboard Catches, page 387 ..... 60&10
Cupboard Catches: Nos. 892A, 1492A, 1892A, M1892A, 493A, 893A, 494A, 894A ..... 60&10
Nos. K1492A, Y1492A 70
Nos. T442A, 442A 60, 10, 10
Nos. K442A, Y442A ..... 70&10
Nos. T445A, 445A 60, 10, 10
Nos. K445A, Y445A ..... 70&10
Nos. 402, Y402, 802P ..... 60&10
Nos. 821P, L821P, C821E ..... 60&10
Cupboard Catches, page 390 ..... 60&10
French Window Catches 60
Transom Catches 55
Cupboard Turns, pages 396, 397 ..... 60&10
Cupboard Turns, pages 398, 401 ..... 60, 10, 10
Closet Catches ..... 70&10
Screen Door Latches 60, 10, 10
Screen Door Catches, Nos. 200, 400 70
Screen Door Catches, Nos. 8201 to 8801 75
Screen Door Catches: Tuscan and Berlin Bronzed ..... 70&10
Tokio and Yeddo Bronzed 75
Screen Door Catches, page 405 70
Screen-Door Catches, page 406 ..... 70&10
Screen-Door Catchers: T6410 to T6415, 6410 to 6415 70
T6412 to T6417, 6412 to 6417 ..... 66⅔
Window Screen Corner Brackets ..... 70&10
Door Screen Brackets ..... 70&10
Chain Door Fasts, page 410 ..... 65&10
Chain Door Fasts, page 411 ..... 60&10
Ladd's Door Fasts 60
Letter-Box Plates 60, 10, 10
Letter-Box Plates, Ekado Design 60, 10, 10
Letter-Box Plates, Plain Bronze 60, 10, 10
Name Plate Letter-Box Plates ..... 60&10
Name Door Plates ..... 60&10
Number Door Plates ..... 60&10
Japanned Door Handles 60
Roggin's Thumb Latches ..... 60&10
Bronzed Door Handles, Nos. 21, 22, 23 60
62, 65, 67 ..... 60&10
Barn Door Latches 60
Barn Door Hasp and Latch 60
Store Door Handles, Japanned ..... 60&10
Bronzed, pages 428, 430 ..... 66⅔
Bronzed, page 420 ..... 60&10
Store Door Handles, pages 431, 437 ..... 60&10
Pages 438, 439 60
Store Door Handles and Lock 70
Bronzed, pages 442 to 445 ..... 60, 10, 10
Store Door Handles and Lock: Bronzed Handles 70
Bronze Metal Handles 60, 10, 10
Store Door Handles and Lock 60, 10, 10
Page 459 ..... 60&10
Store Door Dead Lock Handles ..... 60&10
Flush Barn Door Pulls 60, 10, 10
Door Pulls, pages 463-465 ..... 60&10
Japanned Barn Door Pulls 60
Door Pulls, pages 465-465½ 60
Bar Handles ..... 60&10
Push Plates ..... 60&10
Drawer Pulls, pages 470, 471 ..... 65&10
Drawer Pulls, Nos. 0½, 1 ..... 65&10
Nos. 85, 86 ..... 70&10
Nos. 61, 66 ..... 65&10
Drawer Pulls, page 481 ..... 70&10
Drawer Pulls, Nos. 1616A to M1617A ..... 70&10
Nos. C492E, C392E 75
Drawer Pulls, page 483 ..... 70&10
Druggists' Drawer Pulls 70
Label Plates 70
Drop Handles, page 486 60
Escutcheons for Drop Handles 60
Drop Handles, page 487 70
Lifting Handles ..... 60&10
No. 2 ..... 66⅔
Nos. 4, 1, 8M8 60
Nos. 5, 7, 3 ..... 60&10
Ring Handles ..... 65&10
Shelf Box Handles ..... 65&10
Drawer Handles 60
Trunk Handles 60
Flush Rings 60, 10, 10
Flush Drawer Handles 55
Chest Handles ..... 65&10
Flush Chest Handles, Japanned 70
Flush Chest Handles, Bronzed ..... 70&10
Flush Trap Door Rings 70
Wrought Chest Handles, Nos. 71 to 76 ..... 60&10&10
Nos. 171 to 176 ..... 70&10
Nos. 1 to 6 ..... 60&10
Nos. 101 to 106 70
Tub Handles, Nos. 15, 115 ..... 60&10
Wrought Tub Handles, Nos. 7, 107 ..... 60&10&10
Clothes Line Hooks ..... 60&10&10
Harness Hooks ..... 60&10
Store Rack Hooks ..... 60&10
Baggage or Harness Hooks ..... 60&10
Hotel or School-House Hooks 60
No. 93 60
No. 95 ..... 60&10
Coat and Hat Hooks, to screw ..... 60&10
To drive ..... 60&10
Coat and Hat Hooks: Nos. 13, 113, 5, 105, 25 60
Nos. 4, 24, 34, 104, 75, 175 ..... 60&10
Coat and Hat Hooks, pages 506, 508, 509, 510 to 513, 517, 518 ..... 50&10
Coat and Hat Hooks, pages 507, 514 to 516½, 519 to 525 60
Wardrobe Hooks 60
Screw Hat Hooks 60
Ceiling Hooks, page 527 60
Ceiling Hooks, page 523 55
Chandelier Hooks 60
Chandelier or Braced Screw Hooks 55
Chandelier Hooks, No. 410 ..... 60&10
Lamp Hooks 55
No. 412, Screw Hooks 80
No. 419, Screw Hooks 75
No. 415, Screw Hooks 70
No. 405, Drive Hooks 70
Wire Drive Hooks 55
Brush or Duster Hooks ..... 70&10
Coppered Screw Hooks ..... 70&10
Picture or Mirror Hooks ..... 70&10
No. 80, Cup Hooks ..... 70&10
No. 81, Cup Hooks 80
No. 82, Cup Hooks 75
Nos. 89, 90 Cup Hooks 75
No. 50, Hooks and Eyes 70
No. 55, Hooks without Eyes 70
No. 63, Hooks and Pins 66⅔
Brass Hooks and Eyes, whole page 541 ..... 66⅔
Cabin Door Hooks 60
Ship Cabin Door Hooks 60
No. 100, Safety Gate Hooks 60
Gate Hooks and Eyes 87½
Gate Hooks without Loose Eyes 87½
Cornice Hooks and Eyes 87½
Cornice Hooks without Eyes 87½
Plates for Cornice Hooks 87½
Bird-Cage Eyes 87½
Stair Rod Eyes 87½
Mosquito Bar Eyes 87½
Bright Wire Goods 87½
Wire Cup Hooks 87½
Belt Hooks 80
Wire S Hooks 60
Mobiling Hooks 60
Curtain Pins 55
No. 5, Picture Nails 60
No. 4, Picture Nails ..... 60&10
Nos. 50, 60, Picture Nails. Nos. 10 & 11 40
Picture Knobs 70
Drawer Knobs 60
Stove Knobs 60
Shutter Knobs, pages 561-563 70
Shutter Knobs, pages 564-566 60
Sash Knobs ..... 60&10
Kettle Knobs ..... 60&10
Sash Lifts, page 567 ..... 60&10
Sash Lifts, page 570 ..... 60&10&10
Sash Lifts and Locks: Nos. 561, 761, T462, 462 ..... 60&10
Nos. K462 and Y462 70
Nos. 862, T490A 460A, M860A and M870A ..... 60&10
Nos. K460A and Y460A 70
Flush Sash Lifts ..... 60&10
Flush Sash Lifts, Tuscan and Berlin Bronzed, Tokio and Yeddo Bronzed, Bronze Metal and Imperial ..... 60&10
Ekado Sash Lifts ..... 60&10
Plain Sash Lifts ..... 60&10
Window Pulls ..... 60&10
Sash Pull Plates ..... 60&10
Sash Pulls ..... 60&10&10
Sash Pulls and Plates ..... 60&10&10
Shutter Bars, No. 0 ..... 60&10
Shutter Bars, No. T55, &c ..... 60&10&10
Shutter Bars, Nos. 107, 105 ..... 60&10&10
Shutter Bars, pages 583, 584, 586, 587 ..... 60&10&10
Shutter Bars, pages 585, 588, 589 70
Window Spring Bolts, Nos. 10, 15, 20 70
Window Spring Bolts, other numbers 70
Window Spring Bolt Sockets 70
Window Springs, Nos. 0 to 7, 10, 17 ..... 60&10&10
Sash Fasts and Props 50
Sash Fasteners, pages, 592, 593, 594 ..... 60&10
Sash Fasteners, page 595 ..... 70&10
Sash Fasteners, page 596 ..... 66⅔
Sash Fasteners: Nos. 50 to 165 ..... 66⅔
Nos. 82 to M98 ..... 70&10
Sash Fasteners, page 598 70
Sash Fasteners: Nos. K522, Y522 75
All other numbers, page 599 ..... 66⅔
Sash Fasteners: Nos. K574 A, Y574A ..... 80&20
All other numbers, page 600 70
Sash Fasteners, page 601 70
Sash Fasteners: Nos. K944A, Y944A ..... 75 & 10
All other numbers, page 602 ..... 70&10
Sash Fasteners, page 604 ..... 66⅔
Nos. T950A to M968A 70
Nos. T1054A to M1058A 75
Sash Fasteners, page 605 ..... 75&10
Transom Lifters, Copper Finished 55
Bronze Metal 45
Nickel Plated ..... 60&10
(Yeddo Bronzed at same price as Nickel Plated.)
Crescent Transom Lifters 55
Lever 55
Sash Centers ..... 60&10
Stubs and Plates ..... 60&10
Shutter Screws 60
Shutter Lifts 60
Sash Rollers ..... 60&10
Shutter Sheaves ..... 60&10
Sliding Door Sheaves 70
Hatfield Pattern Sheaves, Nos. 60, 65 ..... 70&10
Hatfield Pattern Sheaves, No. 50 75
Sliding Door Stops 66⅔
Base Knobs, Wood ..... 70&10
Base Knobs, Iron 70,10,10
Sash Cord Irons 55
Axle Pulleys, page 615 60
No. 6 55
Nos. 0, 00 45
Page 617 55
Nos. 208, 408 60
Nos. 200, 400 50
Page 619 50
Dumb Waiter Pulleys 60
Ceiling Pulleys 60
Hot House Pulleys ..... 60&10
Upright Pulleys ..... 60&10
Side Pulleys ..... 60&10
Screw Pulleys ..... 60&10
Increased Screw Pulleys 60,10,10
Increased Swivel Pulleys 60,10,10
Clothes Line Pulleys, page 625 ..... 60&1
Clothes Line Pulleys, page 626 60
No. 04, Clothes Line Pulleys ..... 60&10
All other Clothes Line Pulleys 60
Tackle or Awning Pulleys ..... 60&10
Well Wheels ..... 60&10
Brass Side Pulleys ..... 70&10
Brass Upright Pulleys 60,10,10
Brass Screw Pulleys 70
Line Cleats ..... 60&10
Foot Scrapers 55
Shelf Brackets, No. 44 ..... 60&10
No. 48 60
Nos. 62, 162, 262 ..... 60&10
Shelf Brackets ..... 60&10
Shelf Brackets: Japanned, Tuscan, Berlin 66⅔
Tokio (K264, K265) 66⅔
Yeddo (Y264, Y265) reduce to same list as Tokio. 66⅔
Hand-Rail Brackets ..... 60&10
Hand Rail Plates ..... 60&10
Hand-Rail Screws ..... 70&10
Wire Fence Hooks 20
Fence Hook Clasp and Braces ..... 60&10
Double-Pointed Tacks ..... 85&10
In Bulk, Blued and Tinned 70
Double-Pointed Shade Tacks 85
Square Crown Carpet Staples 70
Barrel or Hoop Staples ..... 70&10
Box or Casket Staples ..... 70&10
Round Wire Round-Crown Staples 70
Barbed Blind Staples 75
Barbed Bed-Spring Staples ..... 70&10
Poultry Netting Staples ..... 70&10
Flat Steel Round-Crown Staples 66⅔
Norway Iron Clinch Staples 70
Wrought Staples ..... 80&25
Wrought Hooks and Staples ..... 80&25
Hasps and Staples ..... 80&25
Wrought Staples on Plates ..... 80&25
Wagon Bow Staples ..... 80&25
Wagon Stake Irons ..... 60&10
Wagon Nails 50
Hinge Rivets 50
Hinge Nails 60
S Hooks ..... 80&25
D Links ..... 80&25
Open Links ..... 80&25
Washers, 8¾ cents from List 10
Corner Irons 75
Awning Hooks ..... 80&25
Sign Hooks ..... 80&25
Pipe Hooks ..... 80&25
Leader Hooks ..... 80&25
Meat Hooks ..... 80&25
Ham Hooks 75
Well Wheel Hooks 70
Eye Bolts, p. 667 70
Eye Bolts, p. 668 ..... 66⅔
Screw Hooks 66⅔
Hammock Hooks ..... 70&10
Trap Door Rings ..... 80&25
Trap Door Rings and Staples ..... 80&25
Hitching Rings 70
Hitching Hooks and Rings 70
Hitching Post Caps ..... 80&10
Hitching Post Rods 70

Rein Chains.....70
Breast Chains.....70
Halter Chains.....70
Hitching Chains.....70
Shaw Patent Slide Lock Snaps.....60
Double Lock Snaps.....Void.
German Snaps.....40
Sargent's Patent Snaps.....70&10&10
Cock Eye Snaps.....70&10
Covered Spring Snaps.....60&10&10
Open Spring Snaps.....60&10&10
Cattle Ties, Nos. 5, 1.....60&10
Cattle Ties, No. 4.....70
Cattle Ties, page 683.....70
Halter Trimmings or Cattle Ties.....70
Rope Halter Leads.....60
Rope Horse and Cattle Ties.....60
Hitching Halters.....60
Rope Horse and Cattle ties.....60
Bull Snaps.....70
Bull Rings, Nos. 10 to 22.....70&10
Bull Rings, No. 25.....60&10
Cattle Leaders.....70
Ox Bow Pins, Nos. 71, 72.....60&10
Ox Bow Pins, No. 82.....70
White Metal Mane Combs.....55
Ox Balls.....60
Prize Ox Balls (Bronze Metal):.....60
Carriage Knobs.....60&10
Sheep and Cow Bells.....60&10
Kentucky Cow Bells.....70&10
Western Cow Bells.....70&10
Twine Boxes.....60
Paper Clips.....60
Paper Weights.....60
Files.....60
File Hooks.....60
Bird Cage Hooks.....60&10&10
No. 37, Match Safes.....60&10
No. 60 Match Safes.....75&10
Match Safes, pages 704, 705.....60&10&10
Boot Jacks.....50
Nut Cracks.....60&10
Cork Pressers.....50
No. 1 Garden Trowels.....70
No. 15 Garden Trowels.....50
Garden Forks.....70
Hooks.....70
Coffee Pot Stands.....60
Sad Iron Stands.....60
Ice Awls.....55
Ice Axes.....55
Shoe Hammers.....60
Shingling Hatchets.....60
Nail Hammers.....60
Tack Hammers, excepting No. 16.....60
No. 16, Tack Hammers.....60&10
Tack Hammers, page 714, excepting No. 32.....60&10
No. 32, Tack Hammers.....55&5
Tack Hammers, page 715.....60
Carpet Stretchers.....70&10
Tack Claws, Nos. 0, 1, 10.....70
Nos. 30, 31.....60
Page 717.....60
Sargent-Sprague Can Openers.....60
Can Openers.....70&10
Cake Turners.....70&10
Paste Jaggers.....55
Mop Heads.....70&10&10
Perry Sausage Stuffers.....40
Hale Meat Cutters.....60&10&10
Tobacco Cutters.....60
Stebbins' Genuine Gates, Nos. 21 to 24.....40&10
Stebbins' Genuine Gates, Nos. 41 to 55.....60&10&10
Stebbins' Pattern Gates.....70
Stebbin's Genuine Self-boring Gates.....60
Game Traps.....60&10
Spring Balances. Page 728.....40&10
Spring Balances. Page 729.....60
Scale Beams.....55
Poises—separate.....55
File Handles.....60
Chisel Handles.....60
Screw Driver Handles.....60
Awl Hafts.....60
Patent Awl Hafts.....60
Brad Awl Handles.....60
Handled Brad Awls.....60
Handled Scratch Awls.....60
Peg Awls.....60
Brad Awls.....60
Sewing Awls.....60
Awls and Tools, pages 735, 737.....60
Nos. 60, 61.....60
No. 62.....60&10
Brass Plumb Bobs.....60
Lead Plumb Bobs.....50
Japanned Plumb Bobs.....60
Pocket Wrenches.....55
Aiken's Saw Sets.....55
Nail Sets.....70
Appleton's Washer Cutters.....60&10
Saw Screws.....60&10
Saw Rods.....70&10
Melting Ladles.....60
Bench Hooks.....60
Sargent's Iron Planes.....30&10
Squares.....80
Steel Rules.....66⅔
Domestic Shears.....70&10, 10
Domestic Bit Braces.....60&10
Nos. 40, 20, Screw Drivers.....70
No. 1, Screw Drivers.....70&10
No. 60, Screw Drivers.....70
Wrought Nail Claws.....75&10
Wrought Nail Grips.....75&10
Cotton Hooks.....70
Box Hooks.....70
Box Chisels.....60&10&10
Cold Chisels.....70&10
No. 40, Carpenter's Pincers.....60&10
No. 42, Carpenter's Pincers.....50&10
No. 52, Horse Shoeing Pincers.....60&10&10
No. 62.....60&10&10
No. 72.....60&10
Roof Nippers.....60&10
Blacksmiths' Tongs.....75&10
Blacksmiths' Butterises.....75&10
Grindstone Fixtures.....70&10
Shaft Extension.....70&10
Vises.....60&10&10
Saw Vises.....70
Nos. 5, 6, Blacksmith's Drills.....60
No. 10.....60&10
Sockets for Square Shank Drills.....60&10
No. 40, Iron Bench Screws.....70
Nos. 50, 55, Bench Screws.....60&10
Extra Length Bench Screws.....60
Clamp Heads.....70
Door Clamps.....60&10&10
Jack Screws.....60&10
Carriage Makers' Clamps.....70&10
Cabinet Makers' Clamps.....70
Stool Pivots.....60&10
Piano Stool Screws.....60&10
Chair Screws.....60&10
Veneer Points.....20
Table Fasteners.....60&10
Table-leaf Supports.....55&5
Looking-Glass Plates.....60&10
Screws.....60&10
Pin Hinges.....60
Bedstead Fastenings.....55
Bed Hooks.....65&10
Keys.....55

Plate Casters, Nos. 1 to 27.....60
Nos. 31 to 37, 41 to 67, 71 to 107.....55
Philadelphia Casters, Nos. 901 to 927.....60
Nos. 931 to 937.....55
Nos. 1021 to 1027.....60
Nos. 941 to 1057.....55
French and English Pattern Casters.....55
English Pattern Casters.....55
Casters for Iron Bedsteads.....60
Round Shallow Socket Casters.....55
Deep Socket Casters.....55
Piano Forte Casters, All Iron.....60
Brass Wheel.....55
Rubber Tire Casters.....25&10
Bedstead Casters, Nos. 401 to 426.....60
Nos. 432 to 437.....55
Nos. 441 to 1426.....60
Globe Wheel Bed Casters.....60
Bracket Bed Casters.....60
Store Truck Casters.....55
No. 874 Store-Truck Casters.....55
Rubber Tire Store-Truck Casters.....25&10
Cast-Iron Coal Shovels.....60
Cast-Iron Sifters.....60
Wrought-Iron Coal Shovels.....60
Stove-Cover Lifters.....60
Iron-Head Pokers.....55
Brass-Head Pokers.....55
Wood-Handle Pokers.....60&10
Coal Tongs.....60&10
Bronzed Shovels.....60&10
Bronzed Tongs.....55
Bronzed Pokers.....60
Bronzed Fire Iron Sets.....60&10
Cottage Fire Sets, Nos. 25, 26. Nos. 126, 226.....60&10
Cottage Fire Sets, Nos. 20, 22. Nos. 122, 222..60&10&10
Fire Iron Stands.....60&10
Umbrella Stands.....60&10
Blower Stands.....60&10
Fire Dogs.....70
Padlocks.....70&2
Padlock Keys.....70&2

Foreign Markets.

EQUIVALENTS.

	Cents.
Franc, Peseta or Lira	19.3
Florin (Netherlands)	40.2
Florin (Austria)	35.9
Milreis (Portugal)	$1.08.
Milreis (Brazil)	54.6
Mark (Germany)	23.8
	Pounds.
Kilogram	2.205
Picul	134.

WEST INDIES.

PORT OF SPAIN, TRINIDAD, November 23, 1888.—*Asphaltum.*—Our market has been moderately active and steady at $14.04 ℔ ton boiled, and $6.84 crude, free on board, inclusive of export duty. There were shipped since Jan. 1, 46,397 tons, against 39,055 last year, and 34,677 in 1886. *Exchange*, $4.80 @ $4.86 for 90 days' sight drafts on London.—*E. P. Masson.*

CHILI.

VALPARAISO, October 26, 1888.—*Copper*—At slightly easier rates, owing to a higher exchange, there were sold during the fortnight altogether 22,068 quintals at $28.35 @ $29.10, $28.50 equaling £76. 12/4, with 27/6 steam freight. Nearly all 1888 shipments have been disposed of. *Nitrate.*—A large business has been done in December and January shipments, sales aggregating 783,000 quintals, 95 ℅ at $2.80, and 280,000 96 ℅ at $2.80 @ $2.97½, $2.85 equaling 9/4. The total export in September amounted to 1,579,597 quintals, and there remained loading on the 1st inst., 2,348,016 quintals. Nitrate shipments during the first 9 months:

	1886. Quintals.	1887. Quintals.	1888. Quintals.
To North of Europe	4,269,416	7,243,336	8,539,507
To the Mediterranean	112,712	182,938	103,334
To the United States on the Atlantic	1,134,017	1,249,500	2,144,724
To the United States on the Pacific	237,369	164,296	113,438
Totals	5,753,514	8,840,070	10,901,003

During the fortnight 35,700 tons were chartered for Europe, and 2350 for the United States. *Coal* has been looking up again in view of light shipments this way. Newcastle advanced from 32/ to 37/6. *Exchange* has been tending upward. We quote, 90 days' sight on London, 27½d.—*Weber & Co*

EAST INDIES

PENANG, November 13, 1888.—*Tin.*—Receipts during the fortnight reached 12,000 piculs, of which Europeans took 5200, and Chinese 6000, prices meanwhile declining from $38.10 ℔ picul to $37.62½. From January 1 to November 4, there were shipped to England 118,147 piculs; to the Continent, 338, and to America, 8158. *Exchange.*—Four months' bank, 3/1½ @ 3/0⅝.—*Schmidt, Kustermann & Co.*

SINGAPORE, November 20, 1888.—*Tin.*—Since our report of the 6th inst. Tin touched $37.50 ℔ picul, but is now firmer for ready metal at $38. Supplies are not very large at the moment, but there is every appearance of large arrivals in December and January. Following have been the shipments to America during the first 10 months: This year 47,518 piculs from Singapore and Penang; in 1887, 68,730; in 1886, 59,121; in 1885, 23,863; in 1834, 55,279, and in 1883, 99,164. *Gum Copal.*—There has been a moderate business done at $12 down to $9.20, according to quality. *Gum Damar.*—A small lot of inferior Palambang has been taken by Continental buyers at $20.50 ℔ picul. *Tonnage*—Is more plentiful, but rates are firmer at 60/ for weight. New York via Canal.—Steamers are filling up in China, and nothing can be engaged at present. Via Cape.—The "Flora F. Spofford" continues her loading. For Boston.—The "Penobscot" loads for charterers' account. *Exchange.*—Six months' credits, 3/2⅛.—*Gilfillan, Wood & Co.*

MANILA, December 24, 1888.—*Hemp.*—Quotations are altogether nominal at $15. 15-16 ℔ picul, against $8.50 in 1887, equaling ℔ ton, cost and freight, £54. 10/, against £30. 10/. There cleared for the United States since last cable 3000 bales, against none last year; since January 1 241,000 bales, against 246,000; and there remain loading for do. 25,000, against 11,000; cleared for England since January 1 334,000 bales, against 225,000; loading, 7000, against none; cleared for all other ports, 68,000, against 46,000; receipts at all ports since last cable, 9000, against 9000; since January 1, 642,000 bales, against 527,000 in 1887, and 395,000 in 1886. *Freight*, $7.50, against $5.50. *Exchange*, 3/8½, against 3/8.—*Ker & Co., per cable direct to their agent, Mr. Charles Nordhaus, 89 Water street, New York.*

RUSSIA.

ST. PETERSBURG, December 23, 1888.—*Petroleum.*—The authorities of Batoum have refused to sanction Rothschild's scheme to lay pipes through that town to convey Petroleum from the wells directly to the ship's side. Their objection to the plan is that it would do injury to small traders.—*Per cable direct.*

SWEDEN.

STOCKHOLM, December 18, 1888.—*Iron Ore.*—Considerable agitation is going on in Central Sweden against Gellivara Iron Ore, which the owners of other mines in Sweden want to be saddled with a prohibitive export duty, because they are afraid that it will supersede abroad all other Swedish Iron Ore. As the Lulea-Ofoten Railroad Company intend to build blast furnaces and rolling mills for the purpose of utilizing Gellivara and Luossavara Ores on the spot, the mine owners of Central Sweden demand that the erection of such works be simply prohibited, and a bill will be introduced to that effect during the coming session of Parliament, they being afraid that the present make of Swedish Iron will become unsaleable abroad in competition with Lulea. Meanwhile, Fred Krupp, of Essen, has also resolved to import next summer large amounts of Gellivara Ore, the experiments made with the same at Essen having given the most encouraging results.—*Dagbladet.*

SPAIN

BILBAO, December 15, 1888.—*Metals.*—Spanish exportation during the first nine months as under:

	1886. Tons.	1887. Tons.	1888. Tons.
Calamine	21,140	20,698	23,105
Pyrites	515,034	594,779	620,600
Iron Ore	3,316,242	4,262,415	3,599,475
Pig Iron	42,967	89,488	48,980
Precipitate	20,607	19,499	21,239
Quicksilver	540	1,118	875
Pig Lead	82,591	99,168	97,917
Total	3,999,181	5,087,165	4,421,191

The falling off in the Iron branch and Quicksilver deserves attention.—*Bilbao Maritimo y Comercial.*

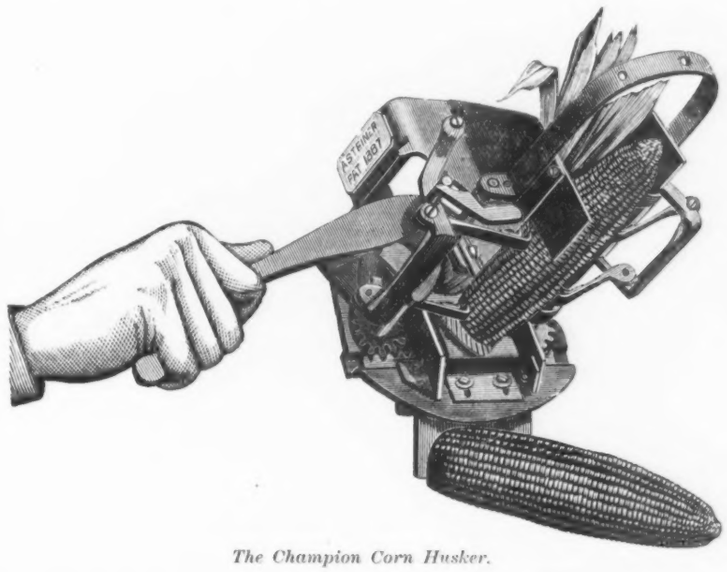
The extensive sheet iron mills of George W. Johnson, at Newcastle, Pa., have been remodeled, and additional ground and building added to it.

A supplement has been issued to the rate sheet of the Queen and Crescent route on pig iron. The principal change is that the rate from Rockwood and Dayton has been made $5.78 to Atchinson, Kansas City, Leavenworth and St. Joseph, and from Chattanooga, Rising Fawn and the Birmingham district $5.64 to all the points named.

The Servia, which sailed on Saturday for Europe, carried quite a party of iron and steel makers, among them being C. W. McKinney, general manager, and A. Scranton, superintendent, of the Scranton Steel Company, and Messrs. Gayley and Lauder, of Pittsburgh.

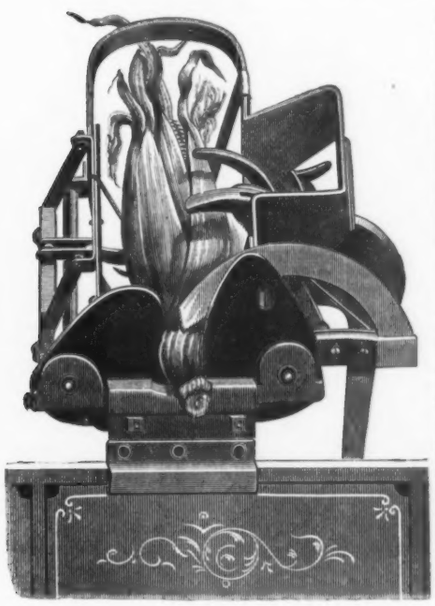
The Champion Corn Husker.

A simple but efficient method of husking corn by machinery is illustrated herewith. This device is the invention of A. Steiner, a practical Illinois farmer, who perfected the machine after many years of experiment, in the hope of avoiding the drudgery of husking corn by hand.



The Champion Corn Husker.

One of the principal claims of the inventor is that the Champion Corn Husker will handle corn either wet or dry, so that its operations are not dependent upon the condition of the weather. The husking can therefore be done in the field, or after the corn has been shocked, or when it has been dumped near the crib, so that this



Champion Corn Husker for Use in the Field.

work can be done at odd times or when other work about the farm is not possible. One of the illustrations shows the full machine, while the other represents it bolted to a wagon body for use in the field. It is composed of a three-sided metal frame. Extending across the bottom are four fingers with teeth on them and two arms. On the inside of the front piece is a V-shaped knife standing upright. In operating the machine the ear of corn is laid in from the top, the end of the cob projecting through the slot in the face, the handle is raised, the knife moves down and cuts the cob, and at the same time two plungers force the ear down imbedding the teeth of the four fingers in the husk, after which the two arms drop down, the husk is cut from the cob and the four arms separating tear the husk apart and the clean ear of corn drops down. The machine adjusts itself to the size of any ear. It is strongly made of steel and malleable iron, is not easily put out of order, and can be operated by a boy. Another feature of the machine is that it saves the husks intact, so that they can be gathered and sold for mercantile uses. It is sold by the Champion Corn Husker Company, 347 Wabash avenue, Chicago.

The Kitchen Jewel.

The accompanying illustration represents this article, which is manufactured by the T. B. Harkins Foundry Company, Bristol, Pa. From the illustration given herewith it will be seen that it is intended to be placed in the stove hole, thus bringing the cooking utensil which is placed in it close to the heat without affecting the fire. Its utility is thus obvious and the manufacturers make the point that it is also a great coal saver, as small cooking utensils can be put in this receptacle, thus making it unecessary to have a large fire. It is made in four sizes, Nos. 6, 7, 8 and 9.

The Kitchen Jewel.

Minnesota has a board of prison inspectors who have just completed a tour through the States from California to the Atlantic Coast, and will prepare a report. Their account respecting institutions in New York is not in the least flattering. At Elmira there were 500 men who learn stone cutting and recut the blocks until they are reduced to sand. They also manufacture electrical instruments of brass with great care, only to destroy them, melt the material and begin again. The only prison visited that pays its expenses is at Detroit, which has the public account system.

Benedict's Reservoir Mucilage Brush.

Mr. A. L. Benedict, of New Canaan, Conn., is introducing to the trade a novel mucilage brush which will be found very convenient for desk use. It combines the principles of an oil can with a bristle brush, and presents the appearance indicated by the cut shown herewith, reminding one very much of the oilers used in connection with the sewing machines of common use. The end of the tube has been ingeniously fitted with a brush, while inside of the bristles is a tube leading down to the mucilage supply. When the reservoir is inverted and the bottom pressed

Benedict's Reservoir Mucilage Brush.

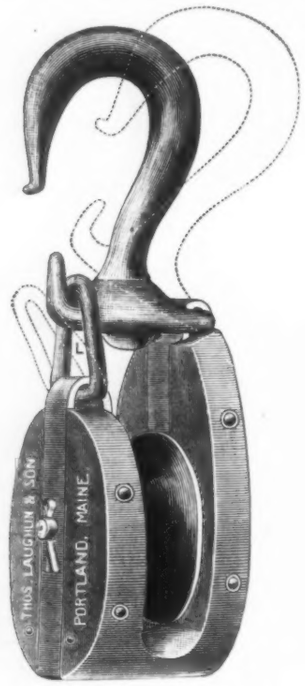
by the thumb the mucilage is forced into the brush, and more or less can be supplied at will. The device has the advantage of keeping the mucilage away from the air, so that it does not become thick by evaporation, nor waste. The brush is self-righting and never tips over; accordingly, the article is always neat, ready and reliable. The reservoir is easily refilled. Mr. Benedict is offering these articles in zinc and brass, and also handsomely nickle-plate, and, we understand, has in contemplation still other styles embodying the same general principles of construction, but more ornamental in character.

Large shipments of firearms and warlike munitions are being made from New York to Hayti for both of the contending factions and the Haytian minister is authority for the statement that $4,000,000 borrowed in Holland by the President of the Dominican Republic is intended for the purchase of a war steamer for the Northern party.

Cars for the transportation of fruit are made that have wicks running their entire length with tanks beneath holding oil enough to burn for ten days.

Automatic Link Snatch Block.

The accompanying illustration represents a new snatch block, patented December 11, 1888, by Thomas Laughlin & Sons, Portland, Me., by whom it is put on the market. It is intended to obviate the difficulties of the old style link which cannot be opened or closed without turning the hook in one position, which is often inconvenient. In this block the link is kept in position by a hard rubber spring under it, and will instantly return to position when pulled out to unlock the hook. When the hook is unlocked it is only necessary to press it against the link, which instantly locks it, so that it remains locked whether there is a hold on it or not. The

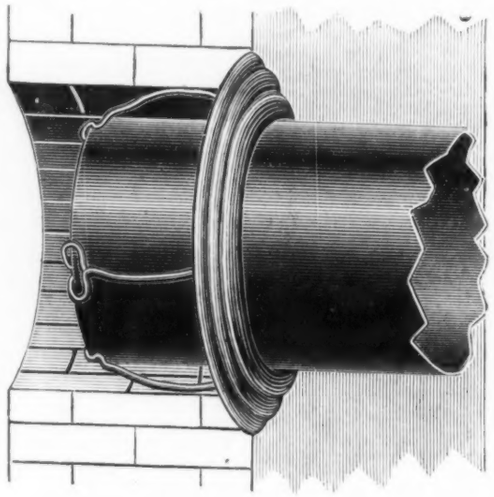


Automatic Link Snatch Block.

simplicity and effectiveness of this arrangement are alluded to and the point is made by the manufacturers that it is impossible to shake the link open, making the block exceedingly secure and satisfactory. The ironwork is referred to as heavy and the sheaves as large and wide in the score as any other make, the quality of the workmanship being also referred to.

Safety Stove-Pipe Holder.

In the cut here shown we present a general view of what is known to the trade as the Safety Stove-Pipe Holder, patented and manufactured by Messrs. Welsh & Kurtis, of Springfield, Ohio. The device consists of a pressed collar, constructed of the best charcoal tin, and is provided with spring fingers attached in such a manner as to expand and grip the interior of a flue hole. In placing the collar in position it is first slid back on the stove pipe until the bent loops or ends of the fingers spring over the end of the pipe, which is set in such a way as to enter the flue far enough to just clear the brickwork, with the mouth of the pipe even with the inside smoke chamber of the chimney. When the fingers have been contracted, the pipe, with holder and collar in position, is inserted in the flue until the collar comes in contact with the wall, when the fingers expand and grip the inner sides of the smoke flue. The fingers are so constructed that they act irrespective of the regularity of the interior surface of the flue, and hold the pipe in either a horizontal or an upright position. The makers state that this device has been indorsed by the fire insurance companies for the reason that its use prevents the dropping of sparks, ashes or soot upon the floor, and the liability of the pipe falling down is avoided. The pipe is prevented from entering the flue so far that it comes in contact with the back of the chimney, and it also holds the collar firmly in place against the wall, which

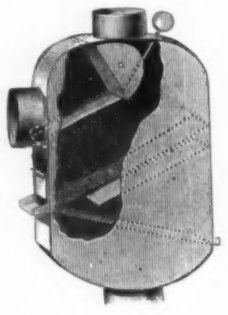


Safety Stove-Pipe Holder.

tends to keep the air from entering the flue between the collar and the chimney. The makers claim for this device that it is easily adjusted in place upon the pipe, that it can be adapted to fit any flue wherever the pipe can be inserted in a flue hole, and that it will hold the pipe in the center of the flue, leaving an air space around the pipe, thus greatly reducing the danger from fire.

Improved Rain-Water Cut-Off.

In the cut shown herewith, we present a view of a rain-water cut-off, a patent for which has recently been granted to W. C. Bayless and J. C. Nichols, of Massy Creek, Jefferson County, Tenn. In the engraving a portion of the side of the cut-off is broken away, exposing the interior, and indicating the general arrangement of parts. The cut-off is claimed to be self-cleaning—that is, the waste water does not pass over the strainers, but finds an outlet above them. The use of reverse strainers makes the device compact, while the construction is simple and durable. Just below the first strainer is a



Rain Water Cut-Off.

turn-back which throws the water on to the highest part of the lower strainer, thus utilizing all the straining surface. When the lever shown in the cut is pushed down into the cut-off the water is turned into the cistern, but when the lever is pulled out the water is discharged at the waste spout. The device is well made in all its parts and so arranged as to give very satisfactory results. We understand that the patent covering the main features of construction is in the market.

Patent Wooden Handle for Tea and Coffee Pots.

John Tobin, of Nos. 125–129 New Jersey Railroad avenue, Newark, N. J., has recently introduced to the trade, in connection with his manufactures of tinware, a very serviceable wooden handle, a general view of which is shown in the accompanying illustration. As will be seen from a careful inspection of the cut,

Patent Wooden Handle for Tea and Coffee Pots.

the handle is composed of three parts, two being of metal and one of wood. Holes in the wooden piece allow the two parts composed of metal to be inserted and screwed together, as indicated at the point where the handle is broken away to show the construction. By this arrangement a handle is provided which is at once simple and durable. The shorter rod screws into the head of the longer one in such a way as to make it impossible, after the handle is attached to the pot, to get out of order or come apart. The strain upon the wooden portion is not confined to one end only, rendering the wood liable to fracture, but is distributed along its entire length. Mr. Tobin is employing these handles upon fluted teapots with spun copper bottom, and upon planished round tea and coffee pots with very satisfactory results.

CURRENT HARDWARE PRICES.

JANUARY 2, 1889.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Ammunition.—

Caps, Percussion, ℔ 1000—
Hicks & Goldmark's
F. L. Waterproof, 1-10's.....50¢
E. B. Trimmed Edge, 1-10's....65¢ } 25 @
E. B. Grnd. Edge, Cent. Fire, 1-10's.70¢ } 25 & 7½ %
Double Waterproof, 1-10's...$1.40
Musket Waterproof, 1-10's.....50¢
G. D.....28¢
S. B.....30¢
Union Metallic Cartridge Co.
F. C. Trimmed.....50¢
F. L. Ground.....65¢ } 25 @
Cent. Fire Ground.....70¢ } 25 &
Dbl. Waterproof.....$1.40 } 7½ %
Dbl. Waterproof, in 1.10's...$1.40
S. B. Genuine Imp..orted.....45¢
Eley's E. B.....54¢ @ 55¢
Eley's D Waterproof, Central Fire...$1.60

Cartridges.
Rim Fire Cartridges.....50&5&2 %
Rim Fire Military.....15&2 %
Cent. Fire, Pistol and Rifle.....25&5&2 %
Cent. Fire, Military and Sporting 15&5&2 %
Blank Cartridges, except 22 and 32 cal., additional 10 % on above discounts.
Blank Cartridges, 22 cal.....$1.75, dis 2 %
Blank Cartridges, 32 cal.....$3.50, dis 2 %
Primed Shells and Bullets.....15&5&2 %
B. B. Caps, Round Ball.....$1.75, dis 2 %
B. B. Caps, Con. Ball, Swgd..$2.00, dis 2 %

Primers—
Berdan Primers.....$1.00, dis 2%
B. L. Caps (for Sturtevant Shells) $1.00, dis 2%
All other Primers.....$1.20, dis 2%

Shells—
First quality, 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Star, Club, Rival and Climax brands, 10 and 12 gauge.....33⅓&10&2%
Club, Rival and Climax brands, 14, 16 and 20 gauge.....30&10&2%
Selbold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax..65&2%
I X L, 10 and 12 guage.....40&5&2%
"Special," 16 gauge.....30&10&5&2%
"Special," 10 and 12 gauge.....40&10&2%
Fowler's Pat.....$3.25

Shells Loaded—
List No. 19, 1887.....20&10%

Wads—
U. M. C. & W. R. A.—B. E., 11 up..$2.00
U. M. C. & W. R. A.—B. E., 9&10.. 2.30
U. M. C. & W. R. A.—B. E., 7&8... 2.60
U. M. C. & W. R. A.—P. E., 11 up.. 3.10
U. M. C. & W. R. A.—P. E., 9&10.. 4.00
U. M. C. & W. R. A.—P. E., 7&8... 4.90
Eley's B. E., 11 up.....$1.75
Eley's P. E., 11@20.....2.80

Anvils.—

Eagle Anvils.....℔ 10¢, dis 20@20&5%
Peter Wright's.....9½¢
Armitage's Mouse Hole.....8¾¢
Armitage's Mouse Hole, Extra.11¼@11½¢
Trenton.....9¼@9½¢
Wilkinson's.....9½@10¢
J. & Riley Carr, Pat. Solid.....11@11¾¢

Anvil Vise and Drill—
Millers Falls Co.....$18.00, dis 20%
Cheney Anvil and Vise.....25%
Allen Combined Anvil and Vise, $3.00, dis 40&10%
Moore & Barnes Mfg. Co.....33⅓%

Apple Parers—

Advance.....℔ doz $4.75
Antrim Combination.....℔ doz 5.50
Baldwin.....℔ doz 5.25
Champion.....℔ doz 7.25
Eureka, 1888.....each 17.00
Family Bay State.....℔ doz 12.00
Gem.....℔ doz 5.25
Gold Medal.....℔ doz 4.00
Hudson's New '88.....℔ doz 3.75
Ideal.....℔ doz 4.75
Improved Bay State.....℔ doz 30.00
Little Star.....℔ doz 5.00
Monarch.....℔ doz 13.50
New Lightning.....℔ doz 5.50
Oriole.....℔ doz 4.00
Penn.....℔ doz 4.00
Perfection.....℔ doz 4.00
Pomona.....℔ doz 4.00
Rocking Table.....℔ doz 6.00
Turntable.....℔ doz 4.50
Victor.....℔ doz 13.50
Waverly.....℔ doz 4.50
White Mountain.....℔ doz 4.50
72.....℔ doz 4.25
76.....℔ doz 5.75
78.....℔ doz 6.50

Augers and Bits—

Douglass Mfg. Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co. } 70%
French, Swift & Co. (F. H. Beecher,
Cook's, Douglass Mfg. Co.....55 %
Cook's, N. H. Copper Co.50&10&50&10&5%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jenning & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ℔ set, 32½ quarters, No. 5, $5; No. 30, $3..dis20%
Lewis' Patent Single Twist.....45%
Jennings' Augers and Bits.....25%
Imitation Jennings' Bits.....60@60&5%
Pugh's Black.....20%
Car Bits.....50&10@60%
L'Hommedieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....10%

Hollow Augers—
Ives'..... } 25&10@ 25
French, Swift & Co..... } &10&5%
Douglass'.....
Bonney's Adjustabl, ℔ doz $18, dis 40&10%
Stearns'.....20&10%
Ives' Expansive, each $4.50...dis 50&10%
Universal Expansive, each $4.50...dis 20%
Wood's.....25@25&10%

Expansive Bits—
Clarks' small, $18; large, $26, dis 35@35&5%
Ives' No. 4, ℔ doz $60.....dis 35@40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $22.....dis 35%
Stearns' No. 2, $18.....dis 20%

Gimlet Bits—
Common ..... ℔ gross $2.75@$3.25
Diamond..... ℔ doz $1.10; dis 25&10%
"Bee"..... 25@25&5%
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ct. Valley Mfg. Co ...30&10%
Double Cut, Hartwell's, ℔ gro.....$5.25
Double Cut, Douglass'.....40&10%
Double Cut, Ives'.....60@60&5%

Bit Stock Drills—
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10&5%
Syracuse, for wood (wood list).30@30&5%
Williams' or Holt's, for metal.50&10&10%
Williams' or Holt's, for wood.....40&10%

Ship Augers and Bits—
L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—

Sewing, Brass Ferrule...$3.50 ℔ gr, dis 45&10%
Pat. Sewing, Short..$1.00 ℔ doz, dis40&10%
Pat. Sewing, Long.....$1.20 ℔ doz, net
Pat. Peg, Plain Top.....$10.00 ℔ gr, dis 45&10%
Pat. Peg, Leather Top..$12.00 ℔ gr, dis 45&10%

Awls, Brad Sets, &c—

Awls, Sewing, Common.....℔ gr $1.70, dis 35%
Awls, Shouldered Peg....℔ gr $2.45, dis 40@40&10%
Awls, Pat. Peg...℔ gr 63¢, dis 40@40&10%
Awls, Shouldered Brad..2.70 ℔ gr, dis 35%
Awls, Handled Brad...$7.50 ℔ gr, dis 45%
Awls, Handled Scratch.....$7.50 ℔ gr, dis 35&10%
Awls, Socket Scratch...$1.50 ℔ doz, dis 25@30%

Awl and Tool Sets—

Aiken's Sets, Awls and Tools, No. 20, ℔ doz $10.00, dis 55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9; dis 25@25&10%
Miller's Falls Adj. Tool Hdls., Nos. 1, $12; 2, $18; dis 25%
Henry's Combination Haft.....℔ doz $6
Brad Sets, No. 42, $10.50; No. 43, $12.50; dis 70&10&5%
Brad Sets, Stanley's Excelsior, No. 1, $7.50, dis 30&10%
Brad Sets, Stanley's Excelsior, No. 2, $4.00, dis 30&10%
Brad Sets, Stanley's Excelsior, No. 3, $5.50, dis 30&10%

Axes—

Makers' and Special Brands—
First quality ..... ℔ doz $6.00@$6.50
Others..... ℔ doz $5.50@$5.75

Axle Grease—

Fraser's, in bulk....Keg ℔ ℔ 4¢, Pail ℔ ℔ 5¢ net
Fraser's, in boxes.....℔ gr $9.50
Dixon's Everlasting, in bxs...℔ doz 1℔ $1.20; 2 ℔ $2.00
Dixon's Everlasting....10-℔ pails, ea. 85¢
Lower grades, special brands, ℔ gr $5.50@$7.00

Axles—

No. 1.....4¢@4½¢, No. 2 5¼¢@5½¢
Nos. 7 to 18.....50@55%
Nos. 19 to 22.....60&10&10@70%
National Wrought Steel Tubular Self-Oiling:
Standard Farm (1 to 5) and Special Farm (A1 to A5):
Less than 10 sets.....33⅓&5%
Over 10 sets.....33⅓&5&5%
X Strong Exp. (6 to 9) and XX Strong Truck (10 to 16):
Less than 10 sets.....10%
Over 10 sets.....10&5%

Bag Holders.

Sprengle's Pat.....℔ doz $18, dis 60%

Balances—

Spring Balances.....50%
Common 24-℔ .....℔ doz $1.50, dis 50%
Chatillon's Spring Balances.....50%
Chatillon's Circular Spring Balances.60%

Bells—

Hand—
Light Brass.....70&10%
Extra Heavy.....60&10%
White Metal.....60&10&10%
Silver Chime.....33⅓&10%
Globe (Cone's Patent).....25&10@35%

Door—
Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%
Pull, Western.....25&10%

Cow—
Common Wrought.....60&10%
Western.....20&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Dodge, Genuine Kentucky....70&70&10%
Texas Star.....50&10&50&10&5%
Call.....40@40&5%
Farm Bells.....℔ ℔ 3¢@3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....50&10&5@60%
Molders'.....40@40&10%
Hand Bellows.....40&10&10&50%

Belting, Rubber—

Common Standard.....70&10%
Standard.....70&70&5%
Extra.....60&5@60&10%
N. Y. B. & P. Co., Standard.....60&5%
N. Y. B. & P. Co., Extra Standard.50&10%

Bench Stops—

Morrill's.....℔ doz $9, dis 50%
Hotchkiss's.....℔ doz $5, dis 10@10&10%
Weston's, ℔ doz No. 1, $10; No. 2, $9, dis 25&10&5%
McGill's.....℔ doz $3, dis 10%

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders—

Extension, Barber's, ℔ doz $15.00, dis 40@40&10%
Extension, Ives, ℔ doz $20.00, dis 60&5@60&10%
Diagonal.....℔ doz $24.00, dis 40%
Angular.....℔ doz $24.00, dis 40&5%

Blind Adjusters—

Domestic.....℔ doz $3.00, dis 33⅓%
Excelsior.....℔ doz $10.00, dis 50&10&2%
Washburn's Self-Locking.....20@20&10%

Blind Fasteners—

Mackrell's, ℔ doz pairs, $1.00, dis 20@20&10%
Van Sand's Screw Pattern, $15.00 ℔ gr, dis 60&10%
Van Sand's Old Pattern, $15.00 ℔ gr, dis 55&10%
Washburn's Old Pattern...$9.00 ℔ gr net
Merriman's.....new list, net
Austin & Eddy Nos. 2008....$9.00 ℔ gr net
Security Gravity.....$9.00 ℔ gr net

Blind Staples—

Barbed, ½ in. and larger..℔ ℔ 7½@8¢ net
Barbed, ⅝ in.....℔ ℔ 8½@9¢ net

Blocks—

Cleveland Block Co., Mal. Iron.....50%
Novelty Tackle Blocks, Mal. Iron.....50%

Bolts—

Door and Shutter—
Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts.....60%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's..90&10%
Wr't Shutter, Brass Knob, " ..40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list....55&10%
Wr't Sunk Flush, Stanley's list....50&10%
Wr't B.K.Flush, Com'n " ....55&10%

Carriage—
Com. list June 10, '84.....75&2½&2%
Genuine Eagle, list Oct., '84.....75&10%
Phila. pattern, list Oct 7, '84, 75&10@ 75&10&5%
R.B.&W., old list.....70%

Tire—
Common, list Feb. 28, '83.....70%
P.C.B.&N.Co., Empire, list Feb 28, '83..70%
P.C.B.&N.Co., Phila., list Oct. '84....82½%
P.C.B.&N.Co., Keystone, Philadel., list Oct. '84.....80%
P.C.B.&N.Co., Norway, Philadel., list Oct. '84.....75%
Am.S.Co., Norway, Phil., list Oct. 16, '84 75&10%
Am.S.Co., Eagle, Phil., list Oct. 16, '84..80%
Am.S.Co., Philadel., list Oct. 16, '84..82½%
Am.S.Co., Bay State, list Feb. 28, '83...70%
R.B.&W., Philadel., list Oct. 16, '84.....82%
R.&E.Mfg.Co.....70%

Stove and Plow—
Stove.....62½%
Plow.....60&5%
Am. S. Co. Stove, Annealed.....62½%
R. B. & W., Plow.....55%
R. B. & W., Stove.....62½%
R. & E. Mfg. Co., Stove.....62½%
Machine, according to size....75&10@80%
Bolt Ends, according to size..75&10@80%

Borax.....℔ ℔ 9½@10¼¢

Boring Machines—

	Without Augers.	Upright.	Angular.	Dis. %
Douglas		$5.50	$6.75	.....50%
Snell's, Rice's Pat.	5.50	6.75	..40&10&10	
Jennings	5.50	6.75	..45@45&10	
Other Machines	2.35	2.75	.....net	
Phillips' Patent with Augurs	7.00	7.50	.....net	

Bow Pins—

Humason, Beckley & Co.'s.....60&10%
Sargent & Co's....$17 and $18, dis 60&10%
Peck, Stow & W. Co....50&10&50&10&5%

Braces.—

Backus, Nos. 110 to 114 and 31 to 33, 60&5@60&10%
Backus, Nos. 6, 8, 12, 14.....60&10&5%
Backus, Nos. 16, 18, 20, 29, 7, 9, 11, 70&10&5%
Barber's, Nos. 10 to 16.....50%
Barber's, Nos. 30 to 33.....50%
Barber's, Nos. 40 to 63.....50&10%
Barker's, Nos. 8, 10 and 12....75&10@80%
Barker's, Plated, Nos. 8, 10 and 12, 65&10@70%
Osgood's Ratchet.....40&10@50%
Spofford's.....50&10%
Ives' New Haven Novelty.....70@70&5%
Ives' New Haven Ratchet..60&5@60&10%
Ives' Barber Ratchet.....60&5@60&10%
Ives' Barbers.....60&5@60&10%
Ives' Spofford.....60&5@60&10%
Common Ball, American.....$1.10@$1.15
Bartholomew's, Nos. 25, 27 and 30, 50&10@60&5%
Bartholomew's, Nos. 117, 118, 119, 70@70&5%
Amidon's Barker's Imp'd Plain, 75&10 @80
Amidon's Barker's Imp. Nickeled, 65& 10@70%
Amidon's Ratchet.....75&10@80%
Amidon's Eclipse Rachet.....60%
Amidon's Globe Jawed.....40@40&10%
Amidon's Corner Brace.....40@40&10%
Amidon's Universal, 8 in., $2.10; 10 in., $2.25
Amidon's Buffalo Ball.....$1.10@$1.15
P. S. & W.....50&10%

Brackets—

Shelf, plain, Sargent's list, 55&10@55& 10&10%
Shelf, fancy, Sargent's list, 60&10@60 &10&10%
Reading, plain.....50&10@60&10&5%
Reading, Rosette.....60&10@60&10&10%

Bright Wire Goods.87½@87½&10%

Broilers—

Henis' Self-Basting. } Inch..... 9 10 9x11
Per doz...$4.50 5.50 6.50

Buckets—See Well Buckets and Pails.

Bull Rings—

Union Co. Nut.....55%
Sargent's.....60%&10@70&5%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70%
Peck, Stow & W. Co's..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

Butcher's Cleavers—

Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%

1	2	3	4
$16.50	19.20	21.50	24.00
5	6	7	8
27.00	30.00	33.50	36.50

New Haven Edge Tool Co.'s.....40%
P. S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%

Butts—

Brass—
Wrought Brass.....70@70&10%
Cast Brass, Tiebout's'.....33⅓
Cast Brass, Corbin's, Fast.....33⅓&10
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—
Fast Joint, Narrow.....50&10%
Fast Joint, Broad.....55&10%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Parliament Butts.....
Mayer's Hinges..... 70 &10%
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.....

Wrought Steel—
Fast Joint, Narrow.....70&10%
Fast Joint, Lt. Narrow.....70&10%
Fast Joint, Broad.....70&10%
Loose Joint, Broad.....70&10%
Table Butts, Back Flaps, &c.....70&10%
Inside Blind, Regular.....70&10%
Inside Blind, Light.....70&10%
Loose Pin.....70&10%
Bronzed Wr'ght Butts..40&10@40&10&5%

Calipers—

See Compasses.

Calks, Toe—

Gautier.....℔ ℔ 5½@6¢
Dewicks.....℔ ℔ 5½@6¢

Can Openers—

Messenger's Comet...℔ doz $3.00, dis 25%
American.....℔ gross $3.00
Duplex.....doz 25¢, dis 15@20%
Lyman's.....℔ doz $3.75, dis 20%
No. 4 French.....℔ doz $2.25, dis 55@60%
No. 5, Iron Handle, ℔ gr $6.00, dis 45@50%
Eureka.....℔ doz $2.50, dis 10%
Sardine Scissors.....℔ doz $2.75@3.00
Star.....℔ doz $2.75
Sprague, Nc. 1, $2.00; 2, $2.25; 3, $2.50; dis 50&10&10%
World's Best, ℔ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00...dis 50&10%
Universal.....℔ doz $3.00, dis 35&5%
Domestic.....℔ doz $2.50, dis 45%
Champion.....℔ doz $2.00, dis 50%

Cards—
Horse & Curry.....10&10@10&10&10%
Cotton.....New list, Aug., 1883, 10@10&10%
Wool.....New list, Aug., 1883, 10@10&10%

Carpet Stretchers—
Cast Steel, Polished.....₱ doz $2.25
Cast Iron, Steel Points.....₱ doz 80¢
Socket.....₱ doz $1.75
Bullard's.....25@25&10%

Carpet Sweepers—
Bissell No. 5.....₱ doz $17.00
Bissell No. 7 New Drop Pan.₱ doz $19,00
Bissell, Grand.....₱ doz $36.00
Grand Rapids.....₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20,00
Magic.....₱ doz $15.00
Jewel.....₱ doz $17.00
Improved Parlor Queen, Nickeled ₱ doz $27.00
Improved Parlor Queen, Japanned ₱ doz $24.00
Excelsior.....₱ doz $22.00
Garland.....₱ doz $18.00
Parlor Queen.....₱ doz $24.00
Housewife's Delight.....₱ doz $15.00
Queen.....₱ doz $16.00
Queen, with band.....₱ doz $18.00
King.....₱ doz $30.00
Weed, Improved.....₱ doz $18.00
Hub.....₱ doz $16.00
Cog-Wheel.....₱ doz $16.00
Conqueror.....₱ doz $22.00
Easy.....₱ doz $22.00
Monarch.....₱ doz $22.00
Goshen.....₱ doz $21.00
Advance.....₱ doz $18.00
Ladies' Friend, No. 1, ₱ doz, $15.00; No. 2.....₱ doz $16.00
American.....₱ doz $15.00
Grand Republic.....₱ doz $35.00

Cartridges—
See Ammunition.

Casters—
Bed.....} New list:
Plate.....} Brass.....55@55&5%
Shallow Socket....} Others....60@60&5%
Deep Socket.....40&10%
Yale Casters, list May, 1884...30&10@40%
Yale, Gem.....60@60&5%
Martin's Patent (Phœnix).....45&10@50%
Payson's Anti-friction.....60@60&10%
"Giant" Truck Casters.....10@10&5
Stationary Truck Casters.....45&10%

Cattle Leaders—
Humason, Beckley & Co.'s.....70%
Sargent's.....60%&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....50&10%

Chain—
Trace, 6½-10-2, exact, ₱ pair, $1.03 50&10@50&10&5%
Trace, 6½-10-3, exact, ₱ pair 92¢ 50&10@50&10&5%
Trace, 7-10-2, exact, ₱ pair $1.11 50&10@50&10&5%
NOTE.—Traces, "Regular" sizes, 3¢ net ₱ pair less than exact.
Log, Fifth, Stretcher, and other fancy Chains, List Nov. 1, 1884 50&10@50&10&5%

American Coil.....	3-16	¼	5-16	⅜
In cask lots.....	$8.75	6.25	5.00	4.50
American Coil.....	7-16	½	⅝	¾
In cask lots.....	$4.40	4.00	3.75	3.50

Less than cask lots, add ½¢@¾¢ ₱ lb.
German Coil, list of June 20, 1887 50&10&5@60%
German Halter Chain, list of June 20, 1887.....50&10&5@60%
Covert Halter, Hitching and Breast 50&2%
Covert Traces.....35@35%
Oneida Halter Chain.....60@60&5%
Galvanized Pump Chain.....₱ 5½¢@6¢
Jack Chain, Iron.....75@75&5%
Jack Chain, Brass.....70@70&5%

Chalk—
White.....₱ gr 50¢
Red.....₱ gr 70¢
Blue.....₱ gr 85¢
White Crayons...₱ gr 12¢@12½¢, dis 10%

Chalk Lines—
See Lines.

Chisels—
Socket Framing and Firmer.
P. S. & W.....} 75&5@75&10%
New Haven and Middlesex.....}
Mix.....}
Ohio Tool Co.....}
Buck Bros.....30%
Merrill.....60&10@60&10&5%
L. & I. J. White.....30@30&5%
Witherby & Douglass.....75@5&5%
Tanged Firmers.....40&10%
Tanged Firmers, Butchers'....$1.75@$5.00
Tanged Firmers, Spear & Jackson's $5 to £
Tanged Firmers, Buck Bros.....30%
Cold Chisels, ₱ lb.....16@19¢

Chucks—
Beach Pat.....each, $8.00, dis 20%
Morse's Adjustable...each, $7.00, dis 20@ 20&5%
Danbury.....each, $6.00, dis 30@30&5%
Syracuse, Balz Pat.....25%

Clamps—
Providence Tool Co.'s Wrought Iron..25%
Adjustable, Gray's.....20%
Adjustable, Lambert's.....20%
Adjustable, Snow's.....40&5%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....20&10%
Stearn's Adjustable Cabinet and Corner.....20&10%
Cabinet, Sargent's.....60%&10%
Carriage Makers', Sargent's.....70&10%
Eberhard Mfg. Co.....40&5@40&10%
Warner's.....40&10@40&10&5%
Saw Clamps, see Vises.

Clips—
Norway, Axle, ¼ & 5-16.....55&5&5%
Second grade Norway Axle, ¼ & 5-16 65&5%
Superior Axle Clips...60%&5@66⅔&5&5%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₱ lb, 5½¢
Steel Felloe Clips.....₱ lb, 5¢
Baker Axle Clips.....25%

Cockeyes.....50%

Cocks, Brass.
Hardware list.....40, &10&2%

Coffee Mills—
Box and Side, List revised Jan. 1, 1888, 50&2%
American, Enterprise Mfg. Co.20&10@30%
The "Swift," Lane Bros.....20&10%

Compasses, Dividers, &c—
Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s Dividers.....60&5%
Bemis & Call Co.'s Compasses & Calipers.....50&5%
Bemis & Call Co.'s Wing & Inside or Outside.....50&5%
Bemis & Call Co.'s Double.....60%
Bemis & Call Co.'s (Call's Pat. Inside).30%
Excelsior.....50%
J. Stevens & Co.'s Calipers and Dividers 25&10%
Starrett's Spring Calipers and Dividers 25&10&10%
Starrett's Lock Calipers and Dividers 25&10%
Starrett's Combination Dividers..25&10%

Coopers' Tools—
Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....40@40&5%
Sandusky Tool Co.....30@30&5%

Corkscrews—
Humason & Beckley Mfg. Co..40@40&10%
Clouth's Pat.....33⅓@33⅓&5%
Howe Bros & Hulbert.....35%

Corn Knives and Cutters—
Bradley's.....10%
Wadsworth's.....25%

Cradles—
Grain.....50&2%

Crow Bars—
Cast Steel.....₱ lb 4¢
Iron, Steel Points.....₱ lb 3½¢

Curry Combs—
Fitch's.....50&10@50&10&10%
Rubber.....per doz $10.00, dis 20%
Perfect.....50%

Curtain Pins—
Silvered Glass.....net
White Enamel.....net

Cutlery—
Beaver Falls & Booth's.....33⅓
Wostenholme.....$7.75 to £

Dampers, &c—
Dampers, Buffalo.....50%
Buffalo Damper Clips.....50%
Crown Damper.....40%
Excelsior.....40&10%

Dividers—
See Compasses.

Dog Collars—
Embossed, Gilt, Pope & Steven's list 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%

Door Springs—
Torrey's Rod, regular size....₱ doz $1.30
Gray's.....₱ gr., $20.00, dis 20%
Bee Rod.....₱ gr., $20.00, dis 20%
Warner's No. 1, ₱ doz, $2.50; No. 2, $3.30; dis 40&10@50%
Gem (Coil), list April 19, 1886.....10%
Star (Coil), list April 19, 1886.....20%
Victor (Coil).....60@60&10%
Champion (Coil).....60&10@60&10&10%
Philadelphia....5 in., $5.00; 8 in., $7.75; dis 35%
Cowell's....No. 1, ₱ doz, $18.00; No. 2, $15.00; dis 50%
Rubber, complete....₱ doz, $4.50; dis 55&10%
Hercules.....50%
Shaw Door Check and Spring.25@30@35%

Drawing Knives—
P. S. & W.....} 75&5@
Mix.....}
New Haven and Middlesex....} 75&10%
Merrill.....60&10&10%
Witherby and Douglas.....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Drills and Drill Stocks—
Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding...each $7.50, dis 20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls...each $3.00, dis 25%
Breast, Bartholomew's..each $2.50, dis 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll's.....25%
Ratchet, Parker's.....20@20&5%
Ratchet, Whitney's.....20&10%
Ratchet, Weston's.....20@25%
Ratchet, Moore's Triple Action...25@30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....dis 20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools...each $1.75@ $1.85

Twist Drills—
Morse.....50&10&5%
Standard.....50&10&5%
Syracuse.....50&10&5%
Cleveland.....50&10&5%
Williams.....50&10&10%

Drill Bits.—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans—
Smallsizes.....₱ lb 6¾¢
Large sizes.....₱ lb 6¼¢

Egg Beaters.
Dover.....₱ doz $2.00
National.....₱ doz $4.50, dis 33⅓%
Family (T. & S. Mfg. Co.), ₱ gro $17.00@ $18.00
Kingston (Standard Co.).....₱ gro $6.50
Acme (Standard Co.).....₱ gro $6.00
Duplex (Standard Co.).....₱ gro $15.00
Rival (Standard Co.).....₱ gro $12.00
Triumph (T. & S. Mfg. Co.), ₱ gro $10.50 @$11.50
Advance, No. 1.....₱ gro $10.50
Advance, No. 2.....₱ gro $10.00
Bryant's.....₱ gro $15.00
Ayres' Spiral.....₱ gro $5.00
Double (Hamblin & Russell Mfg. Co.), ₱ gro $16.20
Easy (Hamblin & Russell Mfg. Co.), ₱ gro $14.00
Triple (Hamblin & Russell Mfg. Co.), ₱ gro $16.20
Spiral (Hamblin & Russell Mfg. Co.), ₱ gro $4.50
Paine, Diehl & Co.'s.....₱ gro $24.00

Egg Poachers—
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00.....dis 25%

Electric Bell Sets.—

Emery—	No. 4 to 46 gr.	No. 54 to 150 gr.	Flour, CF FF.
Kegs, ₱ lb....	4 ¢	5 ¢	2½¢
½ kegs, ₱ lb...	4½¢	5½¢	2¾¢
¼ kegs, ₱ lb...	4½¢	5½¢	3 ¢
10-lb cans, 10 in case.....	6 ¢	6½¢	5 ¢
10-lb cans, less than 10....	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—
See Hollow-Ware.

Escutcheon Pins—
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Escutcheons.
Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Faucets.—
Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
West's Pat. Key.....50&10%
Anchor Lock.....45%
Metallic Key, Leather Lined...60&10@ 60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring Enterprise, ₱ doz $50.00 dis 20&10%
Self-Measuring, Lane's, ₱ doz $36.00, dis 25&10%
Self-Measuring, Victor, ₱ doz $36.00, dis 25&10%

Felloe Plates.....₱ lb 6@6½¢

Fifth Wheels.—
Derby and Cincinnati.....45&5%

Files—
Domestic—
Nicholson Files, Rasps, &c .60&5@60&10%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds) 75% (extra prices on certain sizes)
Other makers, best brands 60&5@60&10&5%
Fair brands.....60&10&10@70%
Second quality.....70&5@75%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Imported—
J. & Riley Carr....List, April 1, 1883, 15%
J. & Riley Carr Horse Rasps.....10%
Moss & Gamble....List, April 1, 1883, 15%
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%
Turton's.....Turton's list, 20@25%
Greaves' Horse Rasps..American list, 60%

Fluting Machines—
Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3½-inch Roll.....$2.15, dis 35%
Eagle, 5½-inch Roll.....$2.85, dis 35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....dis 35%
Crown Jewel, 6 in.....$3.50 each, 35%
American, 5 in., $5.00; 6 in., $5.40; 7 in., $4.50 each.....dis 35%
Domestic Fluter.....$1.50 each net
Geneva Hand Fluter, White Metal, ₱ doz $12, dis 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00.....dis 30%
Shepard Hand Fluter, No. 85 ₱ doz $15.30.....dis 40%
Shepard Hand Fluter, No. 110 ₱ doz $11.00.....dis 40%
Shepard Hand Fluter, No. 95 ₱ doz $8.00.....dis 40%
Clark's Hand Fluter. ₱ doz $15.00, dis 35%
Combined Fluter and Sad Iron, ₱ doz $15.00, dis 30%
Buffalo.....₱ doz $10.00, dis 10%

Fluting Scissors.....45%

Fodder Squeezers—
Blair's.....₱ doz $2.00
Blair's "Climax".....₱ doz $1.25

Forks—
Hay, Manure, &c., Asso. List.....65%
Hay, Manure, &c., Phila. List..60@60&5%
Plated, see Spoons.

Freezers, Ice Cream—
Buffalo Champion.....60&10&5%
Shepard's Lightning.....65%
White Mountain.....60%

Fruit and Jelly Presses—
Enterprise Mfg. Co.....20&10@30%
Henis.....₱ doz $3.75@$4.00
P. D. & Co.....₱ doz $3.75@$4.00
Shepard's Queen City.....40%

Fry Pans—
High List.....75&5@75&10

No.....	0	1	2	3	4
₱ doz....	$3.75	$4.70	$5.30	$5.95	$6.55
No.....	5	6	7	8	
₱ doz.....	$7.50	$8.75	$10.00	$11.25	

Low List.....65&10%

No.....	0	1	2	3	4
₱ doz....	$3.00	$3.75	$4.25	$4.75	$5.25
No.....	5	6	7	8	
₱ doz.....	$6.00	$7.00	$8.00	$9.00	

Fuse— ₱ 1000 ft.
Common Hemp Fuse, for dry ground..$2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 4.75
Double Taped Fuse, for very wet gr. 6.00
Triple Taped Fuse, for very wet gr.. 7.25
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.12.00

Gauges—
Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch, 25&10%
Wire, low list.....10&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....50@50&5%
Wire, Brown & Sharpe's.....10@20%

Gimlets—
Nail and Spike.....50&10&5%
"Eureka" Gimlets.....40&10%
"Diamond" Gimlets.....₱ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
"Bee".....₱ gr $12, dis 25@25&5%

Glue—
Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Le Page & Co.'s Improved Process 25@25&5%

Glue Pots—
Tinned and Enameled.....40&5@40&10%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Grindstones—
Small, at factory.....₱ ton $7.50@9.00

Grindstone Fixtures—
Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%

Hack Saws.—
See Saws.

Halters—
Covert's, Rope, ½-in. Jute.....50&2%
Covert's, Rope, ½-in. Hemp.....40&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse and Cattle Ties, 60&10&2%

Hammers—
Handled Hammers—
Maydole's, list Dec. 1, '85.....25@25&10%
Buffalo Hammer Co....} List Jan. 15, '87
Humason & Beckley...} 50@50&10%
Atha Tool Co.....}
Fayette R. Plumb.....40&10@50%
C. Hammond & Son.....40&10@50%
Verree.....5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....dis 30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@25
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%
Heavy Hammers and Sledges—
3 lb and under.....₱ lb 40¢ } See Trade
3 to 5 lb.....₱ lb 36¢ } Report.
Over 5 lb.....₱ lb 30¢ }
Wilkinson's Smiths.....10½¢@11¢ ₱ lb

Handcuffs and Leg Irons—
Providence Tool Co., Handcuffs, $15.00 ₱ doz.....dis 10%
Providence Tool Co., Leg Irons, $25.00 ₱ doz.....dis 10%
Tower's.....25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00; 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00.....dis 25%

Handles—
Iron, Wrought or Cast—
Door or Thumb.

Nos.....	0	1	2	3	4
Per doz....	$0.90	1.00	1.18	1.35	1.50

60&10&10%
Roggin's Latches.....₱ doz 30¢@35¢
Bronze Iron Drop Latches..₱ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.88.....net
Barn Door.....₱ doz $1.40, dis 10&10%
Chest and Lifting.....70%

Handles, Wood—
Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c...40%
Brad Awl.....₱ gr $2.00
Hickory Firmer Chisel, ass'd. ₱ gr 4.50 } 40% dis
Hickory Firmer Chisel, large. ₱ gr 5.00 }
Apple Firmer Chisel, ass'd...₱ gr 5.00
Apple Firmer Chisel, large...₱ gr 6.00
Socket Firmer Chisel, ass'd..₱ gr 5.00
Socket Framing Chisel, ass'd. ₱ gr 5.00
J. S. Smith & Co.'s Pat File.....50%
File, assorted.....₱ gr 2.75 } dis 40&
Auger, assorted.....₱ gr 5.00 } 40&10%
Auger, large.....₱ gr 7.00 }
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass'.....₱ set $1.25 net
Pat. Auger, Swan's.....₱ set $1.00 net
Hoe, Rake, Shovel, &c.....50&10%

Cross-Cut Saw Handles—
Atkins' No. 1 Loop, ₱ pair, 30¢; No. 3, 22¢; No. 2 and No. 4 Reversible, 22¢.
Boynton's Loop Saw Handles.50¢, dis 60%
Champion.....15¢

Hangers—
Barn Door, old patterns...60&10&10@70%
Barn Door, New England..60&10&10@70%
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
U. S. Wood Track.....65%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....70%
Climax Steel Anti-Friction.....50%
Zenith for Wood Track.....55%
Reed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling's Imp'ved (Anti-Friction).65&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....dis 50&2%
Cheritree.....50&10%
Kidder's.....50&10@60%
The "Boss".....60%
Best Anti-Friction.....60%
Duplex (Wood Track).....60%
Terry's Pat., ₱ doz pr. 4 in, $10.00; 5 in. $12.00.....dis 50&5%
Cronk's Pat., No. 4, $12.00; No. 5, $14.40; No. 6, $18.00.....dis 50&15@60%
Wood Track Iron Clad, ₱ ft. 10¢, dis 50 &15@60%
Carrier Steel Anti-Friction.....50@50&5%
Architect.....₱ set $6.00, dis 20%
Eclipse.....20&10%
Felix.....₱ set $4.50, dis 20%
Richards'.....30@30&10%
Lane's Steel Anti-Friction.....40&10%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20@20&10%
Stearns' Anti-Friction.....20@20&10%
Stearns' Challenge.....25&10@25&10&10%
Faultless.....40@40&5%
American.....₱ set $6.00, dis 20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢.....dis 40%
Paragon, Nos. 1, 2 and 3.....40&10%
Paragon, Nos. 5, 5½, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel, Cast Iron.....50%
Nickel, Malleable Iron and Steel.....40%
Scranton Anti-Friction Single Strap.33⅓%
Scranton Anti-Friction Double Strap..40%
Universal Anti-Friction.....40%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....dis 45%
Star.....40&10@40&10&5%
May.....50&5@50&10%
Barry, $6.00.....dis 40&10%

Harness Snaps—
See Snaps.

Hatchets—
List Jan. 1, 1886.
Isaiah Blood.....35@40%
Hunt's Shingling, Lath and Claw..40&5%
Hunt's Broad.....40%
Buffalo Hammer Co.....40&10@50%
Hurd's.....40&10@50%
Fayette R. Plumb.....40&10@50%
Wm. Mann, Jr., & Co.....50@50&5%
Underhill Edge Tool Co.....40&5@40&10%
Underhill's, Haines and Bright goods 33⅓%
C. Hammond & Son.....40&10@50%
Simmons'.....40&10@50%
Peck's.....40&10@40&10&5%
Kelly's.....50@50&5%
Sargent & Co.....50%
Ten Eyck Edge Tool Co.40&10@40&10&5%
Collins, following list.....10%
Shingling, Nos. 1, 2, 3, ₱ doz $5.50, $6.00, $6.50
Claw, Nos. 1, 2, 3, ₱ doz $6.00, $6.50, $7.00
Lathing, Nos. 1, 2, 3, ₱ doz $5.50, $6.00, $6.50

Hay and Straw Knives—
Lightning....Mfrs'. price ₱ doz $18.00 dis 25%
Jobbers' Extras.
Electric.....₱ doz $17 } dis 30@30&5%
Gem.....₱ doz $10 }
Wadsworth's.....40&7½@40&10%
Carter's Needle.....₱ doz $11.50@$12.00
Heath's.....₱ doz $13.50@14.00
Auburn Hay, Common and Spear Point 50%
Auburn, Straw.....40%

Hinges—
Wrought Iron Hinges
Strap and T.....70&10&5@70&10&10%
Screw Hook and Strap { 6 to 12 in., ₱ ₺....3½¢ / 14 to 20 in., ₱ ₺....3½¢ / 22 to 36 in., ₱ ₺....2½¢
Heavy Welded Hook { 6 to 12 in., ₱ ₺....3½¢ / 14 to 20 in., ₱ ₺....3½¢ / 22 to 36 in., ₱ ₺....2½¢
Screw Hook and Eye { ⅛ in., ₱ doz $1.50 / ⅜ in., ₱ doz $2.45 / ¾ in., ₱ doz $3.80 } dis 10%
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges { 8, 10 & 12 in., ₱ ₺.....5¢ / "Providence" over 12 in., ₱ ₺.....4¢

Spring Hinges—
Geer's Spring and Blank Butts.....40%
Union Spring Hinge Co.'s list, March, 1886.....20%
Acme and U. S.....30%
Empire and Crown.....20%
Hero and Monarch.....50%
American, Gem, and Star, Japanned.20%
American, Gem, and Star, Bronzed...net
Oxford, Bronze and Brass.....net
Barker's Double Acting.....20&10%
Union Mfg. Co.....25%
Bommer's.....30%
Buckman's.....15@20%
Chicago.....30%
Wiles'.....10%
Devore's.....40%
Rex.....40%

Gate Hinges—
Western.....₱ doz $4.40, dis 60%
N. E.....₱ doz $7.00, dis 55%
N. E. Reversible..₱ doz $5.20, dis 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₱ doz $5.00, dis 55&10%
Automatic.....₱ doz $12.50 dis 50%
Common Sense..₱ doz pair $4.50, dis 50%
Seymour's.....45&10%
Shepard's.....60&10&5%
Reed's Latch and Hinges..₱ doz $12.00, dis 50%

Blind Hinges—
Parker.....75&2%
Palmer.....50&5&10%
Seymour.....70&2%
Nicholson.....45&10%
Huffer.....50%
Clark's, Nos. 1, 3, 5, 40 and 50 75&10&5@80%
Clark's Mortise Gravity.....50%
Sargent's, Nos. 1, 3, 5, 11, 13 75&10@75&10&5%
Sargent's, No. 12.....75&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's Noiseless Niagara Buffalo, Champion, Steamboat, Clark's Old Pattern and Clark's Tip Pattern 75&10&5%
Shepard's O. S., Lull & Porter.....75&10%
Shepard's Acme, Lull & Porter.....75&5%
Shepard's Queen City Reversible.....75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $10.50; No. 3, for Brick, $13.50.....25&2%

Hoes—
Handled—
Garden, Mortar, &c.....65%
Planter's, Cotton, &c.....65%
Warren Hoe.....60%
Magic.....₱ doz $4.00

Eye—
D. & H. Scovil.....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat.....60%
Hubbard & Co., S. & O. Pat.....60%
Bare, S. & O. Pat.....60%
Grub.....60@60&10%

Hog Rings and Ringers—
Hill's Improved Ringers.....₱ doz $4.50
Hill's Old Style Ringers.....₱ doz $3.00
Hill's Tongs.....₱ doz $4.50
Hill's Rings.....₱ doz bxs $2.25@2.40
Perfect Rings.....₱ doz bxs $1.75@2.00
Perfect Ringers.....₱ doz $2.50
Blair's Hog Ringers.....₱ doz $2.60@2.65
Blair's Hog Rings.....₱ doz 95¢@$1.00
Champion Ringers.....₱ doz $2.00
Champion Rings, Double.....₱ doz $2.25
Brown's Ringers.....₱ doz $2.00
Brown's Rings.....₱ doz $1.25@1.30

Hoisting Apparatus—
"Moore's" Hand Hoist, with Lock Brake.....20%
"Moore's" Differential Pulley Block..40%
Energy Mfg. Co's.....25%

Holders, File and Tool—
Balz Pat.....₱ doz $4.00; dis 25%
Nicholson File Holders.....20%

Hollow-Ware—
Iron—
Stove Hollow-Ware, Ground. 60&5@60&10%
Stove Hollow-Ware, Unground. 60&10&10@70%
Enameled and Tinned Hollow-Ware—
Kettles.....70@70&5%
Oval Boilers, Sacepans and Glue Pots. 40@40&5%
Gray Enameled Ware...50&10@50&10&5%
Agate and Granite Ware.....25%
Rustless Hollow-Ware.....50@50&5%
Galvanized Tea-Kettles—

Inch	6	7	8	9
Each....	55¢	60¢	65¢	75¢

Silver Plated—
4 mo. or 5 % cash in 30 days.
Reed & Barton.....
Meriden Britannia Co..... } 40&5%
Simpson, Hall, Miller & Co.....
Rogers & Brother.....
Hartford Silver Plate Co..... } 40&5&5%
William Rogers Mfg. Co.....

Hooks—
Cast Iron—
Bird Cage, Sargent's list..... }
Bird Cage, Reading..... } 60&10&10%
Clothes Line, Sargent's list.. }
Clothes Line, Reading list. 60&10@60&10&10%
Ceiling, Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading .50&10@50&10&10%
Wrought Iron—
Cotton.....₱ doz $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)...50%
Wrought Staples, Hooks, &c. See Wrought Goods.
Bench Hooks.....See Bench Stops.
Wire—
Wire Coat and Hat, Gem, list April, 1886.....45%
Wire Coat and Hat, Miles', list April, 1886.....45%
Indestructible Coat and Hat.....45%
Wire Coat and Hat, Standard.....45%
Belt.....75&10@80%
Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%

Horse Nails—

Nos.	6	7	8	9	10
Ausable.....	28¢	26¢	25¢	24¢	23¢.

25&10@25&10&10%

Clinton, Fin..	24¢	22¢	21¢	20¢	19¢.

40&10@50%

Essex.....	28¢	26¢	25¢	24¢	23¢.

25&10@25&10&10%

Lyra.....	25¢	23¢	22¢	21¢	20¢.

40&10&5@50%

Snowden....	25¢	23¢	22¢	21¢	20¢.

40&10&5@50%

Putnam.....	24¢	22¢	21¢	20¢	19¢.

5&10&21¢&21¢%

Vulcan.....	23¢	21¢	20¢	19¢	18¢..12½&5%
Northwest'n.	25¢	23¢	22¢	21¢	20¢.

10&10&5%

Globe.....	23¢	21¢	20¢	19¢	18¢.

12½&5&5%

A. C.....	25¢	23¢	22¢	21¢	20¢.

25&10@33⅓&5%

C. B.-K.....	25¢	23¢	22¢	21¢	20¢.

25&10@33⅓&5%

Champlain..	28¢	26¢	25¢	24¢	23¢.

25&10&10%

New Haven..	28¢	26¢	25¢	24¢	23¢.

25&10@25&10&10%

Saranac.....	23¢	21¢	20¢	19¢	18¢...30&10%
Champion...	25¢	23¢	22¢	21¢	20¢.

10&10&10%

Capewell....	28¢	26¢	25¢	24¢	23¢.

35&5@35&10%

Star.....	23¢	21¢	20¢	19¢	18¢.

10&10@10&12½%

Anchor.....	23¢	21¢	20¢	19¢	18¢.....35%
Western.....	23¢	21¢	20¢	19¢	18¢...40&10%

Empire Bronzed.....14 ₱ ₺.

Horse Shoes—See Shoes Horse.

Hose, Rubber—
Competition.....75&10@75&10&5%
Standard.....70@70&10%
Extra.....60@60&10%
N. Y. B. & P. Co., Para.....30&10%
N. Y. B. & P. Co., Extra.....50%
N. Y. B. & P. Co., Dundee.....60&10&5%

Huskers—
Blair's Adjustable.....₱ gr $8.00
Blair's Adjustable Clipper.....₱ gr 7.00

Jack Screws—See Screws.

Kettles—

	Spun.	Stamped.
Brass, 7 to 17 in., ₱ ₺....	24¢	21 ¢
Brass larger than 17 in., ₱ ₺.....	26¢	23½¢

Enameled and Tea Kettles. See *Hollow-Ware.*

Keys—
Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss, Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys....₱ doz $4.00, dis 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—
Pardin's Applewood Handles....₱ doz $6.00.....dis 40%
Pardin's Rosewood or Cocobolo..₱ doz $9.00.....dis 40%

Knives—
Wilson's Butcher Knives.....25@30%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Nichols' Butcher Knives.....40&10%
Ames' Shoe Knives.....20@25%
Ames' Bread Knives.....₱ doz $1.50, dis 15@20%
Moran's Shoe and Bread.....20%
Hay and Straw.....See Hay Knives.
Table and Pocket.....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn, Auburn Mfg. Co. Crescent.....$3.50

Knobs—
Door Mineral.....65@68%
Door Por. Jap'd.....75@78%
Door Por. Nickel.....$2.00@2.25
Door Por. Plated, Nickel.....$2.00@2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10&50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture, Plain.....75¢ gro inch, dis 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₱ gro 80¢, dis 60&10%

Ladles—
Melting, Sargent's.....55&10%
Melting, Reading.....35&10%
Melting, Monroe's Pat. ₱ doz $4.00, dis 40%
Melting, P. S. & W.....35&10@40%
Melting, Warner's.....30%

Lawn Mowers—
Standard List.....50&10%
Enterprise.....60&10%

Lanterns—
Tabular—
Plain with Guards, ₱ doz.....$4.00@4.25
Lift Wire, with Guards, ₱ doz $4.50@4.75
Square Plain, with Guards, ₱ doz $4.00@4.25
Sq. Lift Wire, with Guards, ₱ doz $4.25@4.50
Without Guards, 25¢ ₱ doz less.
Police, Small, $6.00; Medium, $7.25; Large, $9.75.....dis 20@25%

Lemon Squeezers—
Porcelain Lined, No. 1, ₱ doz $6.00, dis 25&30%
Wood, No. 2.....₱ doz $3.00, dis 35%
Wood, Common.....₱ doz $1.70@1.75
Dunlap's Improved..₱ doz $3.75, dis 20%
Sammis....No. 1, $5.00; No. 2, $9; 12, $18 ₱ doz.....dis 25&10%
Jennings' "Star".....₱ doz $2.50
The "Boss".....₱ doz $2.50
Dean's..Nos. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90
Little Giant.....50@50&5%
King.....40&5%

Lines—
Cotton and Linen Fish, Draper's.....50%
Draper's Chalk.....80%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....dis 25%
Cotton Chalk.....55%
Samson, Cotton, No. 4, ₱ No. 4½, $2.50; dis 10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gro.....dis 25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes, No. 18, $3.60; No. 19, $3.00; No. 20, $2.50
Ventilator Cord, Samson Braided, White or Drab Cot..₱ doz $7.50, dis 20%

Locks, &c.—
Door Locks, Latches, &c.
List Dec. 30, '86, chgd Feb. 2, '87, dis 50&10@60&5%
Mallory, Wheeler & Co., list July, '88 50&10@60%
Sargent & Co., list Aug. 1, '88..55&2& 10@60&10%
Reading Hardware Co., list Feb. 2, '88. 55@60&10%
Livingston & Co.....70%
Note.—Lower net prices often made.
Perkins' Burglar Proof.....60&25%
Plate.....33⅓&2%
F. Many's "Extension Cylinder" $10.50 ₱ doz.
Barnes Mfg. Co.....40%
Yale Corrugated Key.....33⅓&5%
Deitz Flat Key.....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Yale, new list.....33⅓%
"Shepardson" or "U. S.".....35%
"Felter" or "American".....40&10%
Seed's N. Y. Hasp Lock.....25%

Cabinet—
Eagle, Gaylord Parker and Corbin... } List March, '84, rev. Jan.1,'85..33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 86 to 96.....30%
Stoddard Lock Co.....30&33⅓%
"Champion" Night Latches.....40%
Barnes Mfg. Co.....40%
Eagle and Corbin Trunk.....25&2%
"Champion" Cab. and Combin...33⅓&2%
Yale.....33⅓%
Romer's.....25%

Padlocks—
List Dec. 23, '84.....75@75&10%
Yale Lock Mfg. Co's.....33⅓%
Eagle.....25&2%
Eureka, Eagle Lock Co.....40&2%
Romer's, Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505..15%
A. E. Deitz.....40%
"Champion" Padlocks.....40%
Hotchkiss.....30%
"Star".....45%
"Horseshoe,".....₱ doz, $9, dis 40%
Barnes Mfg. Co.....40%
Nock's.....30%
Brown's Pat.....25%
Scandinavian.....90@90&10%
Fraim's Pat. Scandavian new list (low) 60%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%

Lumber Tools.
Ring Peavies, "Blue Line" Finish ₱ doz, $20.00
Ring Peavies, Common Finish ₱ doz, $18.00
Steel Socket Peavies.....₱ doz $21.00
Mall. Iron Socket Peavies....₱ doz $19.00
Cant Hooks, "Blue Line" Finish, per doz.....$16.00
Cant Hooks, Common Finish..₱ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₱ doz $14.00
Cant Hoods, Clip Clasp, Common Finish.....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₱ doz $18.00

Lustro—
Four-ounce Bottles....₱ doz, $1.75; ₱ gross.....$17.00

Mallets—
Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Match Safes—
Dangerfield's Self-Igniting...₱ doz $1.50.

Mattocks. Regular list 60&10@60&10&5%

Meat Cutters—
Dixon's ₱ doz:

Nos.	1	2	3	4	
	$14.00	$17.00	$19.00	$30.00	..dis 40&5%

Woodruff's ₱ doz:

Nos.	100	150	
	$15.00	$18.00	....dis 40&5%

Champion ₱ doz:

Nos.	200	300	400	
	$22.00	$27.00	$40.00	....dis 40&45%

Hales Pattern ₱ doz:

Nos.	11	12	13	
	$27.00	$33.00	$45.00	..dis 70@70&5%

American.....%

Nos.	1	2	3	4B	
Each.....	$5	$7	$10	$25	$50 $60

Enterprise.....30%

Nos.	10	12	22	32	42
Each.....	$3	$2.50	$4	$6	$15

Pennsylvania.....40&10%

Nos.	1	2	3	00
₱ doz....	$24.00	$28.00	$36.00	$28.00

Miles' Challenge ₱ doz:

Nos.	1	2	3	
	$22.00	$30.00	$40.00	..45@45&10%

Home No. 1.....₱ doz, $26.00, dis 55&10%
Draw Cut, each:

Nos..	5	2	6	8	
	$50	$75	$80	$225	.....20@25%

Beef Shavers (Enterprise).....20&10@30%
Chadborn's Smoked Beef Cutter..₱ doz $66.00

Mincing Knives—
Am. (2d quality), ₱ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ₱ doz, Single, $2.00: Double, $3 40@45%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable.....₱ doz, $3.00, 25%

Molasses Gates—

Stebbin's Pat.....70@70&7½%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....20%
Lincoln's Pattern.....70@70&10
Weed's.....20&10%

Boss, ₱ doz:

Nos.	1	2	3	4
	$7	$8	$9	$10..60&10&10%

Money Drawers....₱ doz, $18@$20

Muzzles—

Safety.....₱ doz, $3.00 dis 25 %

Nails, see Trade Report.

Wire Nails & Brads, list July 14, '87 70&10%

Wire Nails, Standard Penny...₱ keg $2.45@$2.55

Nail Puller—

Curtiss Hammer.....₱ doz $9, net
Giant, No. 1.....₱ doz, $30.00, 10%
Pelican.....₱ doz, $9.00, dis 25%
Boss.....₱ doz, $30.00, dis 30%
Lightning.....₱ doz $21.00

Nail Sets—

Square.....₱ gr., $4.00@$4.25
Round.....₱ gr. $3.25
Cannon's Diamond Point...₱ gr.,$12, 20%

Nut Crackers—

Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₱ doz $2.00, dis 10%
Turner & Seymour Mfg. Co.....50%

Nuts—

Nuts, off list Jan. 1, 1888: Square. Hex.
Hot Pressed..... 5.4¢ 5.4¢
Cold Punched..... 5.4¢ 5.5¢
In lots less than 100 ℔, ₱ ℔, add ½¢; 1-℔ boxes, add 1¢ to list.

Oakum—
Government.....₱ ℔ 8¢
U. S. Navy.....₱ ℔ 7¢
Navy.....₱ ℔ 6¢@6¼¢

Oilers—

Zinc and Tin.....65@65&10%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz, dis 10@10&10%
Malleable, Hammers, Old Pattern, same list.....40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%

Packing, Steam—
Rubber—

Standard.....60&10@60&10&10%
Extra.....50&10@60%
N. Y. B. & P. Co., Standard...50&10&5%
N. Y. B. & P. Co., Empire.....70%
N. Y. B. & P. Co., Salamander, ₱ ℔ 65¢, dis 30%
Jenkins' Standard.....₱ ℔ 80¢, dis 35%

Miscellaneous—

American Packing.....10¢@11¢ ₱ ℔
Russia Packing.....14¢ ₱ ℔
Italian Packing.....13¢@14¢ ₱ ℔
Cotton Packing.....15¢@17¢ ₱ ℔
Jute.....7¢@8¢ ₱ ℔

Padlocks—

See Locks.

Pails—

Galvanized Iron—

Quarts	10	12	14
Hill's Light Weight, ₱ doz.	$2.75	3.00	3.25
Hill's Heavy Weight, ₱ dz.	3.00	3.25	3.75
Whiting's	2.75	3.00	3.25
Sidney Shephard & Co.	2.80	3.00	3.40
Iron Clad	2.75	3.00	3.25
Fire Buckets	2.75	3.25	3.50

Buckets, see Well Buckets.

Indurated Fibre Ware—

Star Pails, 12 qt.....₱ doz $4.50
Fire, Stable and Milk, 14 qt..₱ doz $5.50

Pencils—

Faber's Carpenters'.....high list 50%
Faber's Round Gilt.....₱ gro $5.25 net
Dixon's Lead.....₱ gro $4.50 net
Dixon's Lumber.....₱ gro $6.75 net
Dixon's Carpenters'.....40&10%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....dis 60&10@60&10&5%

Picture Nails—

Brass Head, Sargent's list.....50&10&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list.50&10&10%
Porcelain Head, Combination list..40&10%
Niles' Patent.....40%

Pinking Irons— ₱ doz 65¢ net

Pipe, Wrought Iron—

List March 23, 1887.

1¼ and under, Plain.....52½%
1¼ and under, Galvanized.....45%
1½ and over, Plain.....62½%
1½ and over, Galvanized.....52½%
Boiler Tubes, Iron.....60%

Planes and Plane Irons—

Wood Planes—

Molding.....50&5@50&10%
Bench, First Quality.....50&10@60%
Bench, Second Quality..60&10@60&10&5%
Bailey's (Stanley R. & L. Co.).....30&10%

Iron Planes—

Bailey's (Stanley R. & L. Co.).....40@10%
Miscellaneous Planes (Stanley R. & L. Co.).....20&10%
Victor Planes (Stanley R. & L. Co.).20&10%
Steer's Iron Planes.....35@35&5%
Meriden Mal. Iron Co.'s.30&10@30&10&10%
Davis's Iron Planes...30&10@30&10&10%
Birmingham Plane Co.....50@50&5%
Gage Tool Co.'s Self-Setting.....20&10%
Chaplin's Iron Planes.....40@40&5%
Sargent's.....30&10@30&10&10%

Plane Irons—

Plane Irons.....20&10%
Plane Irons, Butcher's...$5.00@$5.25 to £
Plane Irons, Buck Bros.....30%
Plane Irons, Auburn Tool Co., "Thistle".....40%
Sandusky Tool Co.:
Single and Cut.....30%
Double.....40%
L. & I. J. White.....25%

Pliers and Nippers—

Button's Patent.....30&10@40%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ₱ doz.....dis 20&10@33⅓%
Humason & Beckley Mfg. Co..50@50&10%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P. S. & W. Cast Steel.....50%
P. S. & W. Tinners' Cutting Nippers, add 6% dis 10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₱ doz, $12.00..30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

Plumbs and Levels—

Regular List.....70&10@70&10&10%
Disston's.....45&10%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis' Inclinometers.....10&10%

Poppers, Corn—

Round or Square, 1 qt..₱ gr $12.00@15.00
Round or Square, 2 qt..₱ gr $25.00@26.00

Post Hole and Tree Augers and Diggers—

Samson Post Hole Digger, ₱ doz $36.00, dis 25&10%
Fletcher Post Hole Augers, ₱ doz $36.00, dis 20%
Eureka Diggers.....₱ doz $16.00@17.00
Leed's.....₱ doz $8.00@9.00
Vaughan's Post Hole Auger, ₱ doz $13.00@14.00
Kohler's Little Giant.....₱ doz $18.00
Kohler's Hercules.....₱ doz $15.00
Kohler's New Champion.....₱ doz $9.00
Schneider.....₱ doz $18.00
Ryan's Post Hole Diggers...₱ doz $24.00
Cronk's Post Bars, ₱ doz $60.00, dis 50&5&50&10%
Gibb's Post Hole Digger, ₱ doz $30.00, dis 40@40&10%

Potato Parers—

White Mountain.....₱ doz $5.00@5.50
Autrim Combination.....₱ doz $8.00
Hoosier.....₱ doz $13.50

Pruning Hooks and Shears—

Disston's Combined Pruning Hook and Saw.....₱ doz $18.00, dis 20&10%
Disston's Pruning Hook, ₱ doz $12.00, dis 20&10%
E. S. Lee & Co.'s Pruning Tools.....40%
Pruning Shears, Henry's Pat, ₱ doz $3.75@4.00 net
Henry's Pruning Shears, ₱ doz $4.25@4.50 net
Wheeler, M. & Co.'s Combination, ₱ doz $12.00, dis 20%
Dunlap's Saw and Chisel, ₱ doz $8.50, dis 30%
J. Mallinson & Co., No. 1, $5.25; No. 2, 7.25

Pulleys—

Hot House, Awning, &c.....60&10%
Japanned Screw.....60&10%
Brass Screw.....60&10%
Japanned Side.....66⅔&10%
Japanned Clothes Line.....60&10%
Empire Sash Pulley.....55&60%
Moore's Sash, Anti-Friction.....50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....dis 50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70.....dis 50%
Hay Fork, "F" Common and Pat. Bushed.....20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating...60%
Shade Rack.....45%
Tackle Blocks.....See Blocks

Pumps—

Cistern, Best Makers.....50&10&60%
Pitcher Spout, Best Makers..60&10&60 &10&10%
Pitcher Spout, Cheaper Goods..70&5@ 70&10&5%

Punches—

Saddlers' or Drive, good quality, ₱ doz 60@65¢
Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis&Call Co's Springfield Socket.50&5%
Spring, good quality....₱ doz $2.50@2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring and Check..40%
Solid Tinners'.....₱ doz $1.44, dis 55%
Tinners' Hollow Punches.....20&2%
Rice Hand Punches.....15%
Avery's Revolving.....30&10%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—

Sliding Door, Wr't Brass, ₱ ℔ 35¢..dis 15%
Sliding Door, Bronzed Wr't Iron..₱ ft. 7¢
Sliding Door, Iron, Painted...₱ foot 4¢ dis 20&10&5%

Barn Door, Light. In.	½	¾	1	
Per 100 feet	$2.50	3.00	4.40,	dis 10%

B. D. for N. E. Hangers—

	Small.	Med.	Large.	
Per 100 feet...	$2.15	2.70	3.25..	net

Terry's Wrought Iron, ₱ foot.....4¼@5¢
Victor Track Rail, 7¢ ₱ foot.....dis 50&2%
Carrier Steel Rail, ₱ foot.....4½¢

Rakes—

Cast Steel, Association goods.....65%
Cast Steel, outside goods.....60&10&70%
Malleable.....70&70&5%
Gibbs Lawn Rake.....$12.00, dis 50%
Canton Lawn Rake.....$9.00, dis 50%
Ft. Madison Prize Bow Brace and Peerless.....65%
Fort Madison Steel Tooth Lawn Rake, $6.00.....dis 25%

Razors—

J. R. Torrey Razor Co.....20%
Wostenholme and Butcher, $10.00 to £, dis 10%

Razor Strops—

Genuine Emerson.....60@60&5%
Imitation " ₱ doz $2.00, dis 20&10&5%
Torrey's.....20%
Badger's Belt and Com.....₱ doz $2.00
Lamont Combination.....₱ doz $4.00

Rivets and Burrs—

Copper.....50@50&10%
Iron, list Nov. 17, '87.....50%

Rivet Sets—

dis 50&2@50&10%

Rods—

Stair, Brass.....25&2%
Stair, Black Walnut.....₱ doz 40¢

Rollers—

Barn Door, Sargent's list.....60&10&10%
Acme (Anti-Friction).....55%
Union Barn Door Roller.....70%

Rope—

Manufacturers' prices for large lots:
Manila...½ in. and larger ₱ ℔ 14½¢
Manila.....⅜ in. ₱ ℔ 14¾¢
Manila.....¼ and 5-16 in. ₱ ℔ 15¼¢
Manila Tarred Rope.....₱ ℔ 13¾¢
Manila, Hay Rope.....℔ ₱ ℔ 14¼¢
Sisal...½ inch and larger ₱ ℔ 12¾¢
Sisal.....⅜ in. ₱ ℔ 12¾¢
Sisal.....¼ and 5-16 in. ₱ ℔ 13¾¢
Sisal, Hay Rope.....₱ ℔ 12½¢
Sisal, Tarred Rope.....₱ ℔ 11¾¢
Sisal, Medium Lathe Yarn.₱ ℔ 11½¢
Cotton Rope.....₱ ℔ 15c@18¢ net
Jute Rope.....₱ ℔ 7¢

Dis 1½% for cash in 10 days.

Rules—

Boxwood.....80&10@80&10&10%
Ivory.....50@50&10%
Starrett's Rules and Straight Edges, Steel.....25&10%

Sad Irons—

From 4 to 10, at factory....₱ 100 ℔, $2.40@$2.55
Self-Heating.....₱ doz $9.00 net
Self-Heating, Tailors'....₱ doz $18.00 net
Gleason's Shield and Toilet.....25%
Mrs. Pott's Irons.....40@40&5%
Enterprise Star Irons.....40%
Combined Fluter and Sad Iron, ₱ doz, $15.00.....dis 15%
Fox Reversible, Self-Fluter ₱ doz $24.00 net
Chinese Laundry (N. E. Butt Co.) 8½¢ dis 15%
New England.....5¢, dis 15%
Mahony's Troy Pol. Irons.....25%
Sensible.....20@20&5%

Sand and Emery Paper and Cloth—

List April 19, 1886.....35&40%
Sibley's Emery and Crocus Cloth.....30%

Sash Cord—

Common.....₱ ℔, 10@11¢
Patent, good quality.....₱ ℔ 13@13½¢
White Cotton Braided, fair quality ₱ ℔ 28@20¢
Common Russia Sash.....₱ ℔ 13½¢
Patent " ₱ ℔ 15¢
Cable Laid Italian Sash.....₱ ℔ 22¢@23¢
India Cable Laid " ₱ ℔ 13¢
Silver Lake, A Quality, White, 50¢, dis 10&10&5%
Silver Lake, A Quality, Drab, 55¢, dis 10&10&5%
Silver Lake, B Quality, White, 50¢, dis 20&10&5%
Silver Lake, B Quality, Drab, 55¢, dis 20&10&5%
Silver Lake, C Quality, White (only) 27¢@28¢
Sylvan Spring, Extra Braided, White, 34¢
Sylvan Spring, Extra Braided, Drab..30¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....25¢
Samson, Braided, White Cotton, 50¢, dis 30@30&5%
Samson, Braided, Drab Cotton, 55¢, dis 30@30&5%
Samson, Braided, Italian Hemp, 55¢, dis 30@30&5%
Samson, Braided, Linen, 80¢, dis 30@30&5%

Sash Locks—

Clark's, No. 1, $10.00; No. 2, $8.00 ₱ gr, dis 33⅓%
Ferguson's.....33⅓%
Morris and Triumph, list Aug. 16, 1886, 60&2%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₱ gr $4.00
Common Sense, Nickel Plated ₱ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60@60&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Stoddard "Practical".....10%
Ives' Patent.....60@60&10%
Liesche's, Nos. 100 and 110, ₱ gr $8; 105, $10.00.....dis 20&10%
Davis, Bronze, Barnes Mfg. Co.....50%
Champion Safety, list March 1, 1888 55@55&5%
Security.....70%

Sash Weights—

Solid Eyes.....₱ ton $22.00

Sausage Stuffers or Fillers—

Milas' "Challenge," ₱ doz $20.00, dis 50@50&5%
Perry.....₱ doz, No. 1, $15.00; No. 0, $21.00.....dis 50@50&5%
Draw Cut No. 4, each $30.00.....dis 20%
Enterprise Mfg. Co.....20&10@30%
Silver's.....40&10%

Saws—

Disston's Circular.....45@45&5% } Extras sometimes given by jobbers.
Disston's Cross Cuts.....45@45&5% }
Disston's Hand 25@25&5%
Atkins' Circular.....50%
Atkins' Silver Steel Diamond X Cuts ₱ foot 70¢
Atkins' Special Steel Dexter X Cuts ₱ foot 50¢
Atkins' Special Steel Diamond X Cuts ₱ foot 30¢
Atkins' Champion and Electric Tooth X Cuts.....₱ foot 27@28¢
Atkins' Hollow Back X Cuts..₱ foot 18¢
Atkins' Shingle, Mulay, Drag, &c.....45%
W. M. & C., Hand.....30&5@30&10%
W. M. & C., Champion X Cuts, Regular.....₱ foot 24@26¢
W. M. & C. X Cuts, Thin Back ₱ foot 27¢@29¢
Peace Circular and Mill.....45&10%
Peace Hand Panel and Rip 20&10@20&10&10%
Peace Cross Cuts, Standard...₱ foot 25¢
Peace Cross Cuts, Thin Back ₱ foot 27@28¢
Richardson's Circular and Mill 45@45&10%
Richardson's X Cuts, No. 1, 30¢; No. 2, 27¢; No. 3, 24¢

Hack Saws—

Griffin's Hack Saws, complete.40&10@ 50%
Griffin's Hack Saw, Blades only....40& 10@50%
Star Hack Saws and Blades.....25%
Diamond Hack Saws and Blades.....25%
Eureka and Crescent.....25%

Saw Frames—

White Vermont.....₱ gro $9.00@10.00
Red, Polished and Varnished.....₱ doz $1.50, dis 25%

Saw Sets—

Stillman's Genuine...₱ doz $5.00@7.75, dis 40&5%
Stillman's Imita..₱ doz $3.25@5.25, dis 40&5&40&10%
Common Lever....₱ doz $2.00, dis 40&5%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00, dis 40&10&50%
Leach's...No. 0, $8.00; No. 1, $15.00, dis 15@20%
Nash's.....20&10@20&10&10%
Hammer, Hotchkiss.....$5.50, dis 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....10%
Bemis & Call Co.'s Cross Cut.....12½%
Aiken's Genuine.....$13.00, dis 50&10%
Aiken's Imitation.....$7.00, dis 55&5%
Hart's Pat. Lever.....20%
Disston's Star, ₱0, No. 15, $5.50; dis 20& 10@20&10@10%
Atkin's Lever, ₱ doz No. 1, $6.00; No. 2, $9.60
Atkin's Criterion.....₱ doz $7.50
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....dis 40&10%
Avery's Saw Set and Punch.....40%

Saw Tools—

Atkin's Perfection, $15.00; Excelsior, $6.00 ₱ doz

Scales—

Hatch, Counter, No. 171, good quality, ₱ doz $21.00
Hatch, Tea, No. 161....₱ doz $6.75@$7.00
Union Platform, Plain.....$2.10@2.50
Union Platform, Striped.....$2.20@2.30
Chatillon's Grocers' Trip Scales.....50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@40&10%
Richle Bros.' Platform.....5%

Scale Beams—

Scale Beams, List Jan. 12, '82...50&10@ 50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $0.50.....dis 30&10%
Box, 1 Handle.....₱ doz $4.00, dis 10%
Box, 2 Handle.....₱ doz $6.00, dis 10%
Defiance Box and Ship.....20&10%
Foot.....50&10@60%
Ship, Common.....₱ doz $3.50 net
Ship, Providence Tool Co.....10%

Screen Window and Door Frames—

Porter's Pat. Window and Door Frame, 33⅓&10%
Screen Corner Irons, Warner's...33⅓@ 33⅓&10%
Stearns' Frames and Corners.25@25&10%

Screw Drivers—

Douglas Mfg. Co.....20&10&10%
Disston's.....45&10%
Disston's Pat. Excelsior.....45&10%
Buck Bros.....30%
Stanley R. & L. Co.'s Varnished Handles.....65&10%
Stanley R. & L. Co.'s Black Handles. 60&10%
Sargent & Co.'s No. 1 Forged Blade. 60&10&10%
Sargent & Co.'s Nos. 20, 30 and 60..66⅔& 10&10%
Knapp & Cowles' No. 1.....60&20@70%
Knapp & Cowles' No. 1 Extra.60@60&10%
Knapp & Cowles' Nos. 00 & 4....50&5@ 50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Ellrich's Socket and Ratchet..25@25&10%
Allard's Spiral, new list.....25%
Kolb's Common Sense..₱ doz $6.00, dis 25&10%
Syracuse Screw-Driver Bits....30&30&5%
Screw Driver Bits.....₱ doz 50@75¢
Screw-Driver Bits, Parr's.....₱ gro $6.25
Fray's Hol. Hdle. Sets. No. 3, $12.00, dis 25@25&10%
P. D. & Co.'s all Steel.....50%

Screws—

Wood Screws—List, Brass, Jan. 27; Iron, July 1, 1887.

Flat Head Iron.....70% } Extra 10% often given by jobbers.
Round Head Iron....65% }
Flat Head Brass.....65% }
Round Head Brass...60% }
Flat Head Bronze....65% }
Round Head Bronze.60% }

Machine—
Flat Head, Iron.....55%
Round Head, Iron.....50%
Bench and Hand—
Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₱ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Lag, Blunt Point.....75@75&10%
Coach and Lag, Gimlet Point.....75%
Bed.....25&5%
Hand Rail, Sargent's.....66⅔&10%
Hand Rail, H. & B. Mfg. Co...70&10@75%
Hand Rail, Am. Screw Co.....75%
Jack Screws, Millers Falls list..50@50&5%
Jack Screws, P. S. & W.....35%
Jack Screws, Sargent...60&10@60&10&5%
Jack Screws, Stearns'.....40@4?&10%

Scroll Saws—
Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cabinet Makers', $15.....25%
Barnes' Scroll Saw Blades.....35%

Scythe Snaths.....50&2%

Shears—
American (Cast) Iron...75&10@75&10&5%
Pruning...See Pruing Hooks and Shears.
Barnard's Lamp Trimmers...₱ doz $3.75
Tinners'.....20&2%
Seymour's, List, Dec., 1881.
60&10&10@60&10&10&5%
Heinch's, List, Dec., 1881.
60&10&10@60&10&10&5%
Heinsch's Tailor's Shears.....33⅓%
First quality C. S. Trimmers..80@80&10%
Second quality C. S. Trimmers.
80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Cleveland Machine Co., Solid Steel Forged.....70%
Clauss Shear Co., Japanned.....70%
Clauss Shear Co., Nickeled, same list..60%

Sheaves—
Sliding Door—
N. W. & Co., list July, 1888.50&10@60&5%
R. & E., list Dec. 18, 1885.....55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec. 18, 1885.....60&2%
Moore's Anti-Friction.....60%
Sliding Shutter—
R. & E. list Dec. 18, 1885.....60&10&2%
Sargent's list.....60&10%
Reading list.....60&10&10%

Ship Tools—
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%

Shoes, Horse, Mule, &c.—
Horse—
Burden's, Perkins', Phœnix, at factory. $4.00
Mule—
Add $1 ₱ keg to above prices.
Ox, Wrought—
Ton lots.....₱ ℔ 9¢
1000 ℔ lots.....₱ ℔ 9½¢
500 ℔ lots.....₱ ℔ 10¢

Shot—
(*Eastern prices 2¢ off, cash, 5 days.*)
Drop, ₱ bag, 25 ℔.....$1.16
Drop, ₱ bag, 5 ℔.....20
Buck and Chilled, ₱ 25-℔ bag.....1.41
Buck and Chilled, ₱ 5-℔ bag.....34

Shovels and Spades—
Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron.....50&10%
Griffith's C. S.....60@60&10%
Griffith's Solid C. S. R. R. Goods.....20%
Old Colony (Sanford Fork & Tool Co).20%
St. Louis Shovel Co.....20@20&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co.....50&10%
Payne Pettebone & Son, list January, 1886.....30%
Remington's (Lowman's Patent) 30&10@40%
Rowland's, Black Iron.....50&10%
Rowland's Steel.....60&5@60&10%

Shovels and Tongs—
Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%

Skeins, Thimble—
Western list.....75&5@75&10%
Columbus Wrt. Steel, list Nov. 1, 1887.20%
Coldbrookdale Iron Co.....50&10%
Utica P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%

Sieves—
Buffalo Metallic, S. S. & Co., new list. 50&25&10%
Barler Flour Sifters.....₱ doz $2.00
Smith's Adjustable Sifters....₱ doz $2.25
Smith's Adjustable Milk Strainer. ₱ doz $2.00
Smith's Adjustable F. & C. Strainer. ₱ doz. $1.75
Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₱ doz..	70¢	90¢
Mesh 20, Nested, ₱ doz..	85¢	$1.00
Mesh 24, Nested, ₱ doz..	$1.00	1.10

Slates—
School, by case.....50&10%

Snaps, Harness, &c.—
Anchor (T. & S. Mfg. Co.).....65%
Fitch's (Bristol).....50&10%
Hotchkiss.....10%
Andrews.....50%
Sargent's Patent Guarded.....70&10&10%
German, new list.....40&10%
Covert.....50&2%
Covert, New Patent.....50&5&2%
Covert, New R. E.....50@2%
Covered Spring.....60&10&10%

Soldering Irons—
Covert's Adjustable, list Jan. 1, 1886. 35&2%

Spoke Shaves—
Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....20&10@30%

Spoke Trimmers—
Bonney's.....₱ doz $10.00, dis 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz. 55&10%
Douglas'.....₱ doz $9.00, dis 20%

Spoons and Forks—
Tinned Iron—
Basting, Cen. Stamp. Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list.....70&10%
Buffalo S. S. & Co.....33⅓&2%
Silver-Plated—(4 mos. or 5% cash 30 days).
Meriden Brit. Co., Rogers.....50%
C. Rogers & Bros.....50%
Rogers & Bro.....50%
Reed & Barton.....50%
Wm. Rogers Mfg. Co.....50&10@60%
Simpson, Hall, Miller & Co.....50&10
Holmes & Edwards Silver Co..50&10@ 50&10&5%
H. & E. Silver Co., Mexican Silver.50&5%
H. & E. Silver Co., Durham Silver.50&5%
German Silver.....50@50&5
German Silver, Hall & Elton..50&5% cash
Nickel Silver.....50&5@50&10&5% cash
Britannia.....60%
Boardman's Flat Ware.....50&10% } 4 mos
Boardman's Nickel Silver.....50% }
Boardman's Britannia Spoons, case lots.....60% }

Springs—
Elliptic, Concord, Platform and Half Scroll.....60@60&5%
Cliff's Bolster Springs.....25%

Squares—
Steel and Iron..... } 75&10@80%
Nickel-Plated..... }
Try Square and T Bevels..60&10&10@70%
Disston's Try Square and T Bevels.45&10%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares.....30&5%

Staples—
Fence Staples, Galvanized. } Same price
Fence Staples, Plain..... } as B'rb Wire. See Trd. Rep.

Steelyards.....40&10@50%

Stocks and Dies—
Blacksmith's Waterford Goods.....30& 5@30&10%
Blacksmith's Butterfield's Goods...30& 5@30&10%
Lightning Screw Plate.....25@30%
Reece's New Screw Plates....33⅓&5@40%

Stone—
Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 5¢
Sand Stone.....₱ ℔ 2¢
Washita Stone, Extra.....₱ ℔ 21@22¢
Washita Stone, No. 1.....₱ ℔ 15@16¢
Washita Stone, No. 2.....₱ ℔ 11@12¢
Washita Slips, No. 1, Extra..₱ ℔ 40@12¢
Washita Slips, No. 1.....₱ ℔ 30@32¢
Arkansas Stone, No. 1, 4 to 6 in ₱ ℔ $1.75
Arkansas Stone, No. 1, 6 to 9 in ₱ ℔ $1.75
Turkey Oil Stone, 4 to 8 in.....₱ ℔ 40¢
Turkey Slips.....₱ ℔ $1.00@1.50
Lake Superior, Chase.....₱ ℔ 16¢
Lake Superior Slips, Chase...₱ ℔ 31@32¢
Seneca Stone, Red Paper Brand....₱ ℔ 18@20¢
Seneca Stone, High Rounds..₱ ℔ 20@25¢
Seneca Stone, Small Whets..₱ gro $24.00

Stove Polish—
Joseph Dixon s.....₱ gro $6.00, dis 10%
Gem.....₱ gro $4.50, dis 10%
Gold Medal.....₱ gro $6.00, dis 25%
"Mirror".....₱ pro $6.00, dis —%
Lustro.....₱ gro $4.75 net
Ruby.....₱ gro $3.75 net
Rising Sun, 5 gro lots.....₱ gro $5.50
Dixon's Plumbago.....₱ ℔ 8¢ net
Boynton's Noon Day, ₱ gro.....$5.00
Parlor Pride Stove Enamel..₱ gro $13.00
Yates' Liquid, 2 3 5 10 gal. cans ₱ gal ...$0.90 .80 .70 .60
Yates Standard Paste Polish, 10-℔ cans, ₱ ℔ 15¢
Jet Black.....₱ gro $3.50
Japanese.....₱ gro $3.50
Fireside.....₱ gro $2.50
Diamond O. K. Enamel....₱ gro $19.00
Bonneli's Liquid Stove Polish.₱ gro $9.00
Bonneli's Paste Stove Polish..₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Nickel Plate Paste.....₱ gro $6.00

Tacks, Brads, &c.—
List, Jan. 2, 1888.—(*Note.*—Some manufacturers are selling Tacks at slightly higher prices than those named):
American Iron Carpet.....80@80&5%
Steel Carpet.....80@80&5%
Swedes Iron Carpet.....80@80&5%
American Iron Cut.....75&10@75&10%
Swedes Iron.....75&5@75&10%
Swedes Iron, Upholsterers', 75&10@75&10&5%
Tinned Swedes Iron...75&10@75&10&5%
Tinned Swedes Iron, Upholsterers', 75&10@75&10&5%
Gimp and Lace.....75&10@75&10&5%
Tinned Gimp and Lace..75&10@75&10&5%
Swedes Iron Trimmers'.75&10@75&10&5%
Swedes Iron Miners'...75&10@75&10&5%
Swedes Iron Bill Posters' or Railroad, 75&10@75&10&5%
Swedes Steel (Swedes Iron price list), 80@80&5%
Copper Tacks.....50&10%
Copper Finishing, Trunk and Clout Nails.....50&10%
Finishing Nails.....70&10@70&10&10%
Trunk and Clout Nails.70&10@70&10&10%
Tinned Trunk and Clout Nails, 70&10@ 70&10&10%
Basket Nails.....70&10@70&10&10%
Common and Patent Brads, 70&10@70& 10&10%
Hungarian Nails.....70&10@70&10&10%
Chair Nails.....70&10@70&10&10%
Zinc Glaziers' Points.....50@50&5%
Cigar Box Nails.....50&10@50&10&5%
Picture-Frame Points...50&10@50&10&5%
Looking-Glass Tacks....50&10@50&10&5%
Leathered Carpet.....50&10@50&10&5%
Brush Tacks.....50&10@50&10&5%
Shoe Finders,' List Jan. 2, 1888, 10&10@ 10&10&5%
Lining and Saddle Nails, List Jan. 1, 1886:
Silvered.....30&10&10%
Japanned.....20&10&10%
Double-Pointed Tacks.....85%
Wire Carpet Nails.....50&10%
Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, K. & E. Mfg. Co.'s list.....50&10%

Tap Borers—
Common and Rind.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20&10@30%
Clark's.....33⅓@35%

Tapes, Measuring—
American.....25&10%
Spring.....40%
Chesterman's, Regular list.....25@30%

Thermometers—
Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale—Steel
Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—
Shears and Snips (P. S. & W.).....20@25%
Punches, see Punches.
Snips, J. Mallinson & Co.....33⅓%

Tinware—
Stamped, Japanned and Pieced, list Jan. 20, 1887.....70&10@70&10&5%

Tire Benders, Upsetters, &c—
Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Tobacco Cutters—
Enterprise Mfg. Co. (Champion)..20&10 @30%
Wood Bottom.....₱ doz $5.00@$5.25
All Iron.....₱ doz $4.25
Nashua Lock Co.'s ₱ doz, $18.00 50@55%
Wilson's.....55%
Sargent's.....₱ doz, $24, dis, 55&10%
Acme.....₱ doz, $20.00, dis 40%

Transom Lifters—
Wollensak's Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....35%
Skylight Lifters.....35%
Crown, Eagle and Shield.....50%
Reiher's Bronzed Iron Rods, list Jan. 1, 1887.....50&2%
Reiher's Real Bronze or Nickel Plate 50&2%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's Universal.....40@40&10%

Traps—
Game—
Newhouse.....75@40&5%
Oneida Pattern.....30@70&5%
Game, Blake's Patent.....40&10&5%
Mouse and Rat—
Mouse Wood, Choker, ₱ doz holes, 11@12¢
Mouse, Round Wire..₱ doz $1.50, dis 10%
Mouse, Cage, Wire....₱ doz $2.50, dis 10%
Mouse, Catch-'em-alive, ₱ dz $2.50, dis 15%
Mouse, "Bonanza".....₱ gr $10.00 net
Mouse Delusion.....₱ gr $18.00, dis 15%
Rat, "Decoy".....₱ gr $10.00, dis 10%
Ideal.....₱ gr $10.00
Cyclone.....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz 90¢
In full cases.....₱ doz 75¢

Trowels—
Lothrop's Brick and Plastering.....25%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering, 25@25&10%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Triers—
Butter and cheese.....25%

Trucks, Warehouse, &c.—
B. & L. Block Co.'s list, '82.....40%

Tubes, Boiler—
See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ½ ℔ Balls	22¢	30¢
No. 12, ¼ and ½ ℔ Balls	21¢	29¢
No. 18, ¼ and ½ ℔ Balls	18¢	28¢
No. 24, ¼ and ½ ℔ Balls	18¢	28¢
No. 36, ¼ and ½ ℔ Balls	16¢	27¢

No. 264, Mattrass, ¼ and ½ ℔ Balls.48@50¢
Chalk Line, Cotton, ½ ℔ Balls.....25¢
Mason Line, Linen, ½ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ½ ℔ Balls (Spring Twine).....11½¢
3-Ply Hemp, 1 ℔ Balls.....12¢@12½¢
3-Ply Hemp, 1½ ℔ Balls.....11¢@11½¢
Cotton Wrapping, 5 Balls to ℔..15¢@16¢
2, 3, 4 and 5-Ply Jute, ½ ℔ Balls.....10¢
Wool.....6½¢@6½¢
Paper.....1¢@11¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz..18¢

Vises—
Solid Box.....60@60&5%
Parallel—
Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20&5@25%
Simpson's Adjustable.....40%
Saw Filers—
Bonney's, Nos. 2 & 3, ₱ doz $15.00, dis 40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....66⅔&10%
Hopkins'.....₱ doz $17.50, dis 10%
Reading.....40&10%
Wentworth.....20&10%
Combination Hand Vises.....₱ gr $42.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%

Wagon Boxes—
Per ℔.....2½¢

Wagon Jacks—
Daisy.....₱ doz $4.00, dis 25%

Washer Cutters—
Smith's Pat..₱ doz $12.00, dis 20&10&10%
Johnson's.....₱ doz $11.00, dis 33⅓%
Penny's.....₱ doz Pol. $14; Jap'd, $16.00, dis 55%
Appleton's.....₱ doz $16.00, dis 60&10%
Bonney's.....30&10%

Washers—

Size.....	½	5-16	¾	½	⅝	¾	1
Washers....	7	5¾	4¾	3¾	3¼	3½	3¼

In lots less than 200 ℔, ₱ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Wedges—
Iron.....₱ ℔ 3½¢
Steel.....₱ ℔ 4 ¢

Well Buckets, Galvanized—
Hill's.....₱ doz. 12 qt, $4.25; 14 qt, 85.25
Iron-Clad.....₱ doz, 14 qt, $4.25@$4.50
Whiting's Flat Iron Band. ₱ doz $4.25@4.50
Whiting's Wired Top..₱ doz $4.00@4.25

Well Wheels—
8 in., $2.25; 10 in., $2.70; 12 in., $3.25.

Wire—
Iron—
Market, Br. & Ann., Nos. 0 to 18, 70&10@75%
Market, Cop'd, Nos. 0 to 18 ....70@70&5%
Market, Galv., Nos. 0 to 18 .....65&5%
Market, Tin'd, Tinned list Nos. 0 to 18, 67½%
Stone, Br. and Ann'd, Nos. 16 to 18, 72½@72½&5%
Stone, Bright and Ann'd, Nos. 19 to 26, 75@75&5%
Stone, Br. and Ann'd, Nos. 27 to 28, 75&10&5%
Stone, Tinned.....70@70&10%
Tinned Broom Wire.....70&5@70&10%
Galvanized Fence.....65%
Annealed Fence, Nos. 8 and 9.....75%
Annealed Grape, Nos. 10 to 14.....75%
Brass, list Jan. 18, 1884.....15&20%
Copper, list Jan. 18, 1884.....25%
Barb Fence.....See Trade Report
Wire on Spools.....65%
Malin's Steel and Tin'd Wire on Spools, 40%
Malin's Brass and Cop. Wire on Spools 30%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, Nos. 12 to 30..55¢ ₱ ℔
Picture Wire.....60 & 10%
Barb Wire Safety Guards, ₱ 1000, $9.00, dis 25%
Wire Clothes Lines, see Lines.

Wire Cloth, Netting, &c.—
Painted Screen Cloth, No. 34, ₱ 1000 sq. ft, $1.90
Painted Screen Cloth, No. 33, ₱ 100 sq. ft. $20.00
Galvanized Wire Netting.....70&10@75%

Wire Goods—
See Bright Wire Goods.

Wire Rope—
List May 1, 1886.
Iron.....30%
Cast Steel.....40%

Wrenches—
American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....55&3%
Coes' "Mechanics'".....55&10&3%
Girard Standard.....70&10%
Machinists', Sterling Wrench Co..70&10%
Lamson & Sessions' Engineers'...60&10%
Lamson & Sessions' Standard.....70&10%
Goes' Pattern, Wrought..... } 80&80&5%
Girard Agricultural..... } 80&80&5%
Lamson & Sessions' Agric'l.. } 80&80&5%
Sterling Wrought..... } 80&80&5%
Bemis & Call's Pat. Combination.....35%
Bemis & Call's Merrick's Pattern.....35%
Bemis & Call's Brigg's Pattern.....25%
Bemis & Call's Cylinder or Gas Pipe 40&5%
Bemis & Call's No. 3 Pipe.....35&5%
Aiken's Pocket (Bright).$6.00, dis 50&10%
The Favorite Pocket (Briget) ₱ doz $4.00, dis 40%
Webster's Pat. Combination.....25%
Boardman's.....20&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Acme, Bright.....60&3%
Acme, Nickeled.....50&3%
Walker's.....55&3%
Diamond Steel.....55&3%

Wringers, Clothes—
List Jan. 10, 1888, $2.50 off.

Wrought Goods—
Staples, Hooks, &c., list Jan. 12, 1886, 80&20@80&25%

CURRENT METAL PRICES.

JANUARY 2, 1889.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:
¾ to 2 in. round and square.. } ₱ lb 1.90 @ 2.00¢
1 to 6 in. x ⅜ to 1 in..... }
Refined Iron:
¾ to 2 in. round and square.. }
1 to 4 in. x ⅜ to 1½ in..... } ₱ lb 2.10 @ ... ¢
4½ to 6 in. x ⅜ to 1 in..... }
1 to 6 in. x ¼ and 5-16 ..... ₱ lb 2.30 @ ... ¢
Rods—⅝ and 11-16 round and sq.. ₱ lb 2.30 @ ... ¢
Bands—1 to 6 x 3-16 to No. 12..... ₱ lb 2.30 @ 2.4¢
"Burden Best" Iron, base price.. ₱ lb 3.00 @ ... ¢
Burden's "H. B. & S." Iron, base price..... ₱ lb 2 80 @ ...¢
"Ulster"..... lb lb 3.10 @ ...¢
Norway Rods ..... 4.00 @ 5.00¢

Merchant Steel from Store.

Per pound.

Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots..... 2½¢ @ 3¢
Best Cast Steel, base price in small lots 8¾¢ @ 9½¢
Best Cast Steel Machinery, base price in small lots..... 5½¢ @ 6¢

For Classification and Extras adopted by the Merchant Steel Association of the United States, June 1, 1888, see *The Iron Age*, June 21, 1888.

Sheet Iron from Store.

	Common American.		R. G.	Cleaned.
10 to 16.....	₱ lb 2.75	@ 2.80¢	3.25	@ .....¢
17 to 20.....	₱ lb 2.85	@ 3 00¢	3.25	@ 3.50 ¢
21 to 24.....	₱ lb 3.00	@ 3.10¢	3.50	@ .....¢
25 and 26....	₱ lb 3 20	@	3.50	@ .....¢
27.....	₱ lb 3.35	@ 3.37½¢	3.75	@ .....¢
28.....	₱ lb 3.50	@ ... ¢	4.00	@ .....¢

	B. B.	2d qual.
Galv'd, 14 to 20, ₱ lb.	4.50 @	4.38 @ .....¢
Galv'd, 21 to 24, ₱ lb.	4.87½ @	4.75 @ .....¢
Galv'd, 25 to 26, ₱ lb.	5 25 @	5.12 @ .....¢
Galv'd, 27.....	₱ lb, 5.62½ @	5.48 @ .....¢
Galv'd, 28.....	₱ lb, 6.00 @	5.85 @ . ..¢
Patent Planished.....	₱ lb A 10¢	B, 9¢
Russia.....	₱ lb 9½¢ @ 10¢	
American Cold Rolled B. B.....	₱ lb 5¢ @ 7¢	

English Steel from Store.

Best Cast .... ₱ lb 15 ¢
Extra Cast ... ₱ lb 16½ @ 17 ¢
Swaged, Cast ₱ lb 16 ¢
Best Double Shear ₱ lb 15 ¢
Blister, 1st quality ₱ lb 12½¢
German Steel, Best ₱ lb 10 ¢
2d quality. ₱ lb 9 ¢
3d quality ₱ lb 8 ¢
Sheet Cast Steel, 1st quality ₱ lb 15 ¢
2d quality ₱ lb 14 ¢
3d quality ₱ lb 12½¢

METALS.

Tin.

	Per lb
Banca, Pigs	24¢
Straits, Pigs	24¢
English, Pigs	23½¢
Straits in Bars	25¢

Tin Plates.

	Charcoal Plates.—Bright.		Per box.
Melyn Grade.....	IC, 10 x 14..	$5.75 @	$6.00
" "	IC, 12 x 12..	6.00 @	6.25
" "	IC, 14 x 20..	5.75 @	6.00
" "	IC, 20 x 28..	12.00 @	12.50
" "	IX, 10 x 14..	7.25 @	7.50
" "	IX, 12 x 12..	7.50 @	7.75
" "	IX, 14 x 20..	7.25 @	7.50
" "	IX, 20 x 28..	15.00 @	15 50
" "	DC, 12½ x 17..	5 50 @	5.75
" "	DX, 12½ x 17..	7.00 @	7.25
Call and Grade.....	IC, 10 x 14..	5.75 @	6.00
" "	IC, 12 x 12..	6.00 @	6.25
" "	IC, 14 x 20..	5.75 @	6.00
" "	IX, 10 x 14..	7.25 @	7.50
" "	IX, 12 x 12..	7.50 @	7.75
" "	IX 14 x 20..	7.25 @	7.50
Allaway Grade.....	IC, 10 x 14..	5.12½ @	5.37½
" "	IC, 12 x 12..	5.25 @	5.50
" "	IC, 14 x 20..	5.12½ @	5.37½
" "	IC, 20 x 28..	11.00 @	11.50
" "	IX. 10 x 14..	6.00 @	6.25
" "	IX, 12 x 12..	6.25 @	6.50
" "	IX, 14 x 20..	6.00 @	6.25
" "	IX. 20 x 28..	12.00 @	13.00
" "	DC, 12½ x 17..	4.75 @	5.00
" "	DX, 12½ x 17..	5.75 @	6.00

	Coke Plates.—Bright.		
Steel Coke.—	IC, 10 x 14, 14 x 20..	$4.75 @	$5.00
	10 x 20..	7.25 @	7.50
	20 x 28..	9.75 @	10.25
	IX, 10 x 14, 14 x 20..	5.50 @	5.75
BV Grade.—	IC, 10 x 14, 14 x 20..	4.40 @	4.60

	Charcoal Plates.—Terne.		
Dean Grade.—	IC, 14 x 20..	$4.40 @	$4.62½
	20 x 28.....	9.00 @	9.25
	IX, 14 x 20.....	4.40 @	5.62½
	20 x 28.....	11.00 @	11.37½
Abecarne Grade.—	IC, 14 x 20....	4.25 @	4.50
	20 x 28....	8.50 @	9.00
	IX, 14 x 20 ...	5.25 @	5.50
	20 x 28...	10.50 @	10.80

	Tin Boiler Plates.		
IXX, 14 x 26.....	112 sheets.....	$12.50 @	$12.75
IXX, 14 x 28.....	112 sheets....	12 75 @	
IXX, 14 x 31.....	112 sheets	14.25 @	

Copper.

DUTY: Pig, Bar and Ingot, 4¢; Old Copper, 3¢ ₱ lb. Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem.

Ingot.

Lake..... @ 18 ¢
"Anchor" Brand.... @ 17½¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 10, 1887, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		25	25	25	26	27	28	31	33
30	72		25	25	25	26	28	30	34	....
36	96		25	25	25	27	29	33	36	....
36	96		25	25	26	28	30	34	38	....
48	96		25	25	27	29	31	35	....	....
48	96		25	25	28	30	32	36	....	....
60	96		25	25	30	32	37	....	....	....
60	96		25	26	31	....	....	....	....	....
84	96		26	27	..	....	....	....	....	....
84	96		27	28	....	....	....	....	....	....
Over 84 in. wide			28	30	....	....	....	....	....	....

	16 oz.	14 oz.	12 oz.	10 oz.
All Bath Tub Sheets....				
Per pound....	$0.28	0.30	0.32	0 35

Bolt Copper, ⅝ inch diameter and over, per pound..... 25¢
Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.
Circles, over 60 inches diameter, up to 96 inches diameter, inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.
Circles, over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.
Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.
Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

Copper Bottoms, Pits and Flats.

Per pound.

14 ounce to square foot and heavier..... 28¢
12 ounce and up to 14 ounce to square foot..... 29¢
10 ounce and up to 12 ounce..... 31¢
Circles less than 8 inches diameter 2 cents per pound additional.
Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each..... 8¢
Tinning sheets on one side, 30 x 60 each ..... 30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each. ..... 15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each ..... 12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each..... 12¢
Tinning sheets on one side, other sizes, per square foot..... 2½¢
For tinning both sides double the above prices.

Planished Copper.

Planished Copper List May 5, 1888 ..... Net

Brass and Copper Tubes.

Seamless Copper.		Seamless Brass.	
⅝ inch ₱ lb.....	50¢	⅝ inch ₱ lb.....	47¢
½ " "	44¢	½ " "	41¢
⅜ " "	42¢	⅜ " "	39¢
¾ " "	40¢	¾ " "	37¢
⅞ " "	39¢	⅞ " "	36¢
1 " "	37¢	1 " "	34¢
1½ " "	34¢	1½ " "	31¢

Roll and Sheet Brass.

Discount from list..... 10 @ 15 %

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₱ 100 lb.
Western Spelter. ..... 5½¢
"Bergenport" ..... 8¢
"Bertha" ..... 7¾ @ 8¢

Zinc.

Duty; Sheet, 2½¢ ₱ lb.
600 lb casks..... 6½¢
Per lb ..... 7½¢

Lead.

Duty: Pig, $2 ₱ 100 lb. Old Lead, 2¢ ₱ lb. Pipe and Sheets, 3¢ ₱ lb.
American..... 4¼
Newark 4¼
Bar..... 5½¢
Pipe, subject to trade discount..... 6½¢
Tin-Lined Pipe, subject to trade discount..... 15¢
Block Tin Pipes, subject to trade discount..... 45¢
Sheet, subject to trade discount..... 7¼¢

Solder.

½ @ ½ (Guaranteed)..... 16¢
Extra Wiping ..... 13½¢
The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson..... ₱ lb 13¾ @ 14¢
Hallett s ..... " 11½¢

Plumbers' Brass Work.

	Discount per cent.
Ground Bibbs and Stops	55&10&2
Ground Stops, Hydrant Cocks, &c	55&10&2
Corporation Cocks	55&10&2
Corporation Cocks, "Mueller" Pattern, from Western list	55&10&2
Ground Basin and Shampooing Cocks	50&10&2
Compression Basin Cocks	50&10&2
Compression Basin and Sink Cocks	50&10&2
Compression Pantry Cocks	50&10&2
Compression Double Basin and Shampooing Cocks	50&10&2
Compression Double Bath Cocks	50&10&2
Compression Bibbs, Urinal Cocks, Sill Cocks, Stops, Hopper Cocks, Hydrant Cocks and Ball Cocks	50&10&2
Basin Plugs and Basin Grates	55&10&2
Bath and Wash Tray Plugs	55&10&2
Bath Wastes and Washers, Bath and Basin Valves, Sewer and Vacuum Valves, Cistern Valves, Pump Valves and Strainers, Ship Closet Valves and Suction Baskets.	55&10&2
Basin Clamps, Basin Joints and Strainers	55&10&2
Boiler Couplings, Ground Face, per set $1.25	dis 10
Boiler Couplings, Plain Face, per set $1.20	dis 10
Water Back Valve and Plain Couplings, Soldering Nipples and Unions	55&10&2
Union Joints	60&10&2
Hydrant Nozzles, Handles and Guides, Sockets and Clamps, Street Washer Screws and Guides	55&10&2
Hose Goods	55&10&2

Steam and Gas Fitters' Brass and Iron Work.

	Discount per cent.
Brass Globe Valves	60&10&2
Finished Brass Globe Valves, with Finished Brass Wheels	40&10&2
Brass Globe Valves, with Patent Wood Wheels	60&10&2
Brass Globe Angle and Corner Valves	60&10&2
Brass Radiator Angle Valves	60&10&2
Brass Radiator Angle Valves, Frink's Patent	60&10&2
Brass Cross and Check Valves	60&10&2
Brass Check Valves	60&10&2
Brass Hose Valves	60&10&2
Brass and Iron Frink Valves	60&10&2
Brass Safety Valves	60&10&2
Brass Vacuum Valves	50&10&2
Brass Whistle Valves	60&10&2
Brass Balance, Back-Pressure and Foot Valves	50&10&2
Brass Butterfly and Throttle Valves	50&10&2
Brass Pump Valves	50&10&2
Brass Steam Cocks	57½&10&2
Brass Service, Meter and Union Meter Cocks	57½&10&2
Brass Whistles, Water Gauges and Oil Cups	60&10&2
Brass Hollow Plug, Tallow and Globe Oil Cups	50&10&2
Brass Lubricators	60&10&2
Brass Air Valves	60&10&2
Brass Air Cocks	60&10&2
Brass Gauge Cocks	55&10&2
Brass Cylinder Cocks and Steam Bibbs	50&10&2
Brass Swing Joints and Expansion Joints	50&10&2
Brass Test Pumps	50&10&2
Brass Steam Fittings, Rough	60&10&2
Brass Steam Fittings, Finished	20&10&2
Brass Union Joints	60&10&2
Brass Soldering Unions and Nipples	55&10&2
Brass Hose Fittings, Fusible and Boiler Plugs	55&10&2
Iron Body Globe, Angle, Cross and Check Valves	65&10&2
Iron Body Safety, Throttle, Back Pressure, Butterfly and Foot Valves	65&10&2
Iron Cocks, all Iron	65&10&2
All Iron Valves	65&10&2

Miscellaneous.

	Discount per cent.
Cast Iron Fittings	70&10
Plugs and Bushings	75&10
Malleable Iron Unions	67½
Malleable Iron Fittings	25

Paints.

Black, Lamp—Coach Painters'	₱ lb 22 @ 24¢
" Ordinary	6¢
Black, Ivory Drop, fair	12 @ 15¢
" " best	23¢
Black Paint, in oil.....kegs, 8¢; assorted cans,	11¢
Blue, Prussian, fair to best	40 @ 55¢
" " " in oil	45 @ 55¢
" Chinese dry	70¢
" Ultramarine	18 @ 30¢
Brown, Spanish	1¼¢
" Van Dyke	10 @ 12¢
Dryers, Patent American...ass'd cans, 9¢; kegs,	7¢
Green, Chrome	15 @ 23¢
Green, Chrome in oil	14 @ 18 @ 25¢
Green, Paris	good, 20¢; best, 25¢
Green, Paris in oil	good, 30¢; best, 35¢
Iron Paint, Bright Red	₱ lb 2½¢
Iron Paint, Brown	₱ lb 1¾¢
Iron Paint, Purple	₱ lb 3¢
Iron Paint, Ground in oil, Bright Red	₱ lb 6½¢
Iron Paint, Ground in oil, Red	₱ lb 5½¢
Iron Paint, Ground in oil, Brown	₱ lb 5½¢
Iron Paint, Ground, Purple	₱ lb 6¢
Litharge	6½¢
Mineral Paints	2 @ 4¢
Orange Mineral	10¢
Red Lead, American	6½¢
Red Venetian (Eng.) dry	$1.65 @ $1.70
Red Venetian in oil.....asst'd cans, 11¢; kegs,	8¢
Red Indian Dry	9 @ 12¢
Rose Pink	10 @ 13¢